DVD Surround Receiver

MX1050D/22

MX1060D/22S

Service
Service
Service

Service Manual

For Repair infromation on the Sub-woofer please refer to
Type/version package on page 1-2

TABLE OF CONTENTS

	Page
Location of pc boards & Type/version package	1-2
Technical Specifications	1-3
Measurement setup	1-4
Service Aids, Safety Instruction, etc.	1-5
Repair Instructions	2-1
Disassembly Instructions & Service positions	3
Set Block & Wiring diagram	4
PSU Board	5
Front Board	6
Tuner Board (For information only)	7
AV Output Board	8B
DVD Module (For information only)	9
Audio Switch Board	10
Video Switch Board	11
Power Amplifier Board	12
Pro-Logic Board:	13
Set Mechanical Exploded view & parts list	14

CLASS 1
LASER PRODUCT

© Copyright 2001 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

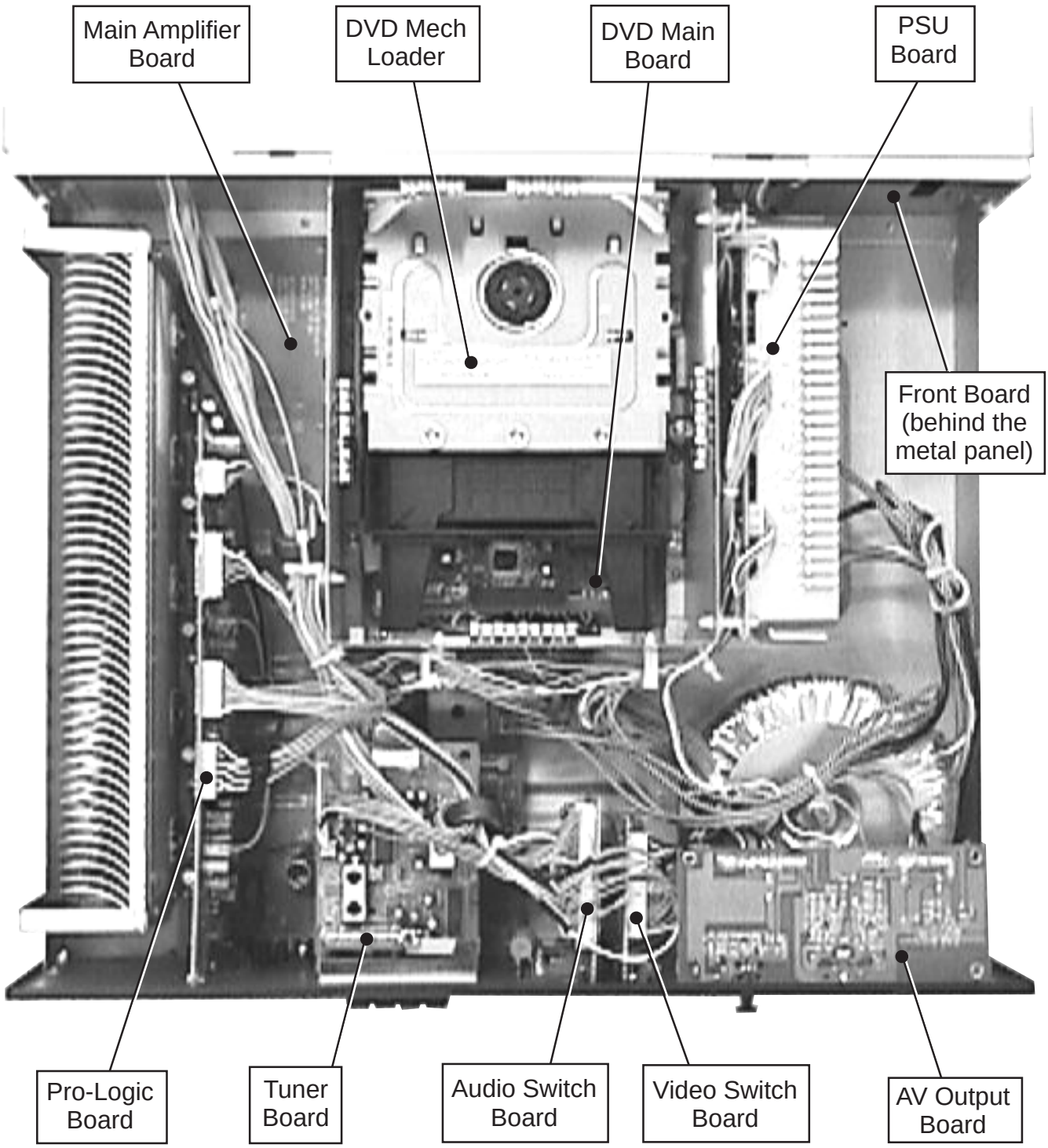
Published by KC 0134 Service Audio Printed in The Netherlands Subject to modification

GB 3139 785 22950

Version 1.0

PHILIPS

LOCATION OF PC BOARDS



VERSION PACKAGE:

Type /Versions: / Package Unit:	MX1050D		MX1060D		For repair see Service Manual with 12NC given below
		/22		/22S	
Center Unit DFR1500/00		x			
Center Unit DFR1600/00S				x	
Sub-woofer SW965/00		x			3139 785 22970
Sub-woofer SW966/00S				x	3139 785 22890
Satellite Speakers CS985/17		x			
Satellite Speakers CS990/17S				x	

SPECIFICATIONS

GENERAL:

Mains voltage	:	230V
Mains frequency	:	50Hz
Power consumption	:	< 4W at Standby
		< 450W Maximum
Clock accuracy	:	< 3 seconds/day
Dimension (w x h x d)	:	435 x 140 x 430mm

TUNER:

FM

Tuning range	: 87.5-108MHz
Grid	: 50kHz
IF frequency	: 10.7MHz ± 70kHz
Aerial input	: 75Ω coaxial
Sensitivity at 26dB S/N	: < 6µV
Selectivity at 600kHz bandwidth	: > 25dB
Image rejection	: > 75dB
Distortion at RF=1mV, dev. 75kHz	: < 3%
Crosstalk at RF=1mV, dev. 75kHz	: > 18dB
Stereo threshold	: < 28dB

MW

Tuning range	: 531-1602kHz
Grid	: 9kHz
IF frequency	: 450kHz ± 3kHz
Aerial input	: Frame aerial
Sensitivity at 26dB S/N	: < 3.2mV/M
Selectivity at 18kHz bandwidth	: > 20dB
IF rejection	: > 38dB
Image rejection	: > 28dB
Distortion at RF=50mV, m=80%	: < 5%

AMPLIFIER:

Reference Output = 1W @ 8Ω

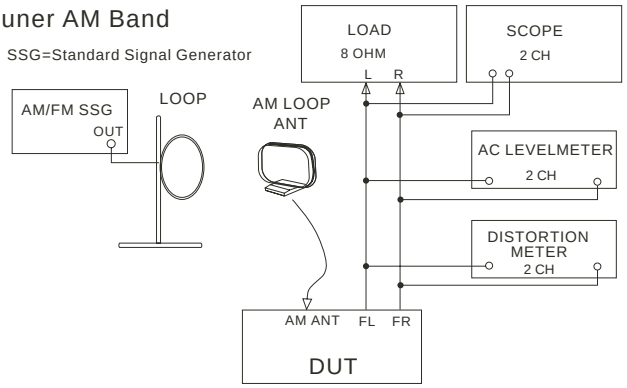
Output power:	Stereo L/R	: 2 x 60W DIN [1)]
	Surround L/R	: 2 x 60W DIN [1)]
	Center	: 60W DIN [1)]
Distortion at 1kHz, rated power - 6dB		: < 0.7%
Signal to Noise Ratio		: > 65dB CCIR
Frequency response		: 20Hz - 20kHz / ± 1dB
Treble control		: 10kHz / ± 10dB
Bass control		: 100Hz / ± 10dB
VCR / TV / CDR input		: 460mV ± 70mV
Sub-woofer output (without load)		: > 3V
Digital output (IEC958, 44.1kHz)		: 500mV ± 20%

DVD SECTION:

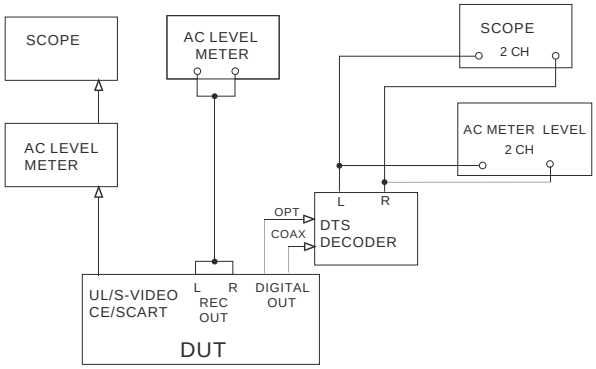
Reference:	
NTSC Test Disc	*: ABEX - TDV540*
PAL Test Disc	*: PHILIPS - LVP10.01*
Load Impedance	*: 75Ω*
Laser Type	: 650 ± 5nm
Disc Diameter	: 8cm / 12cm
Play time (12cm):	
Single Layer	: 2.12hr
Dual Layer	: 4.01hr
2 Sides, Single Layer	: 4.26hr
2 sides, Dual Layer	: 8.02hr
Video Decoding	: MPEG2
Video DAC	: 10 Bits
Signal System	: PAL / NTSC
Video Format	: 4:3 / 16:9
Video S/N ratio	: 56dB min.
Audio DAC	: 24 Bits / 96kHz
Video Output:	
CVBS Output	: $1V_{p-p}$ ± 10%,
S-Video Output	Y : $1V_{p-p}$ ± 10%
	C : $286mV_{p-p}$ ± 10%
Digital Output	: Coaxial & Optical

[1)] 8Ω, 1kHz, 0.7% THD

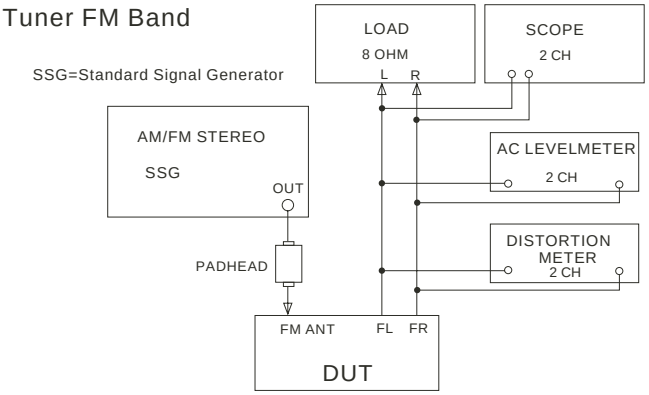
Tuner AM Band



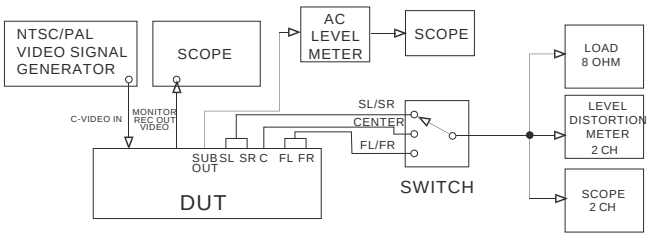
S-Video/Scart/Digital Output



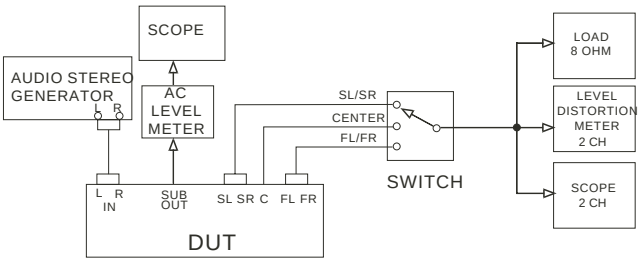
Tuner FM Band



CD/DVD/C-VIDEO OUTPUT



Balance EQ Power



SERVICE AIDS

Service Tools:

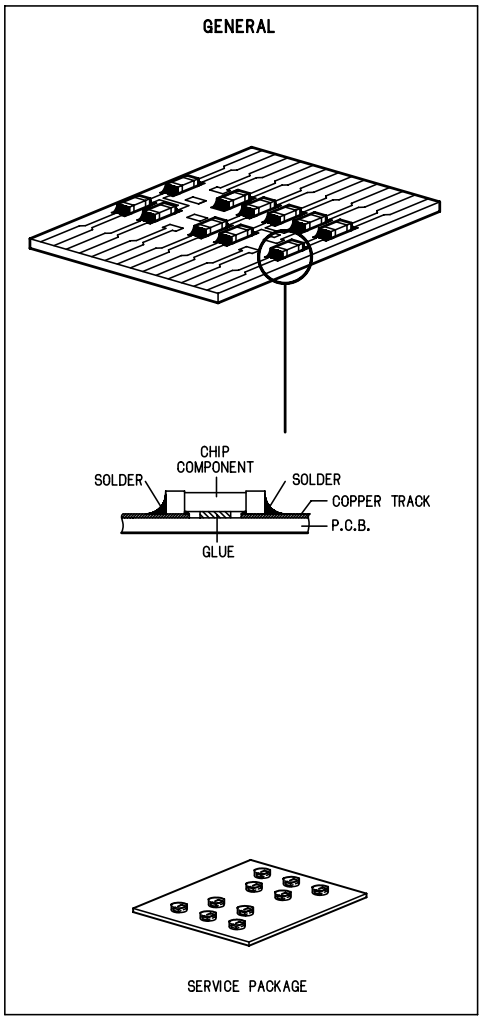
Universal Torx driver holder 4822 395 91019
Torx bit T10 150mm 4822 395 50456
Torx driver set T6 - T20 ..... 4822 395 50145
Torx driver T10 extended 4822 395 50423

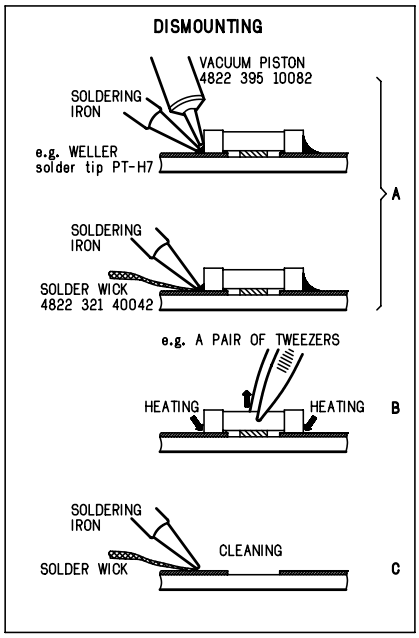
Complete kit ESD3
(combining all above products) 4822 320 10671
Wristband tester 4822 344 13999

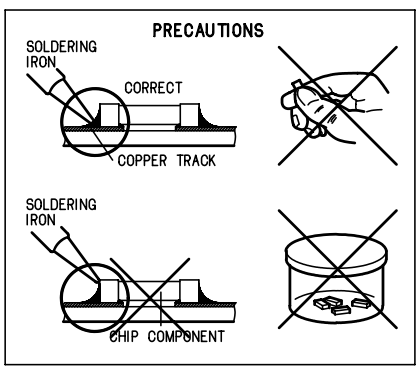
ESD Equipment:

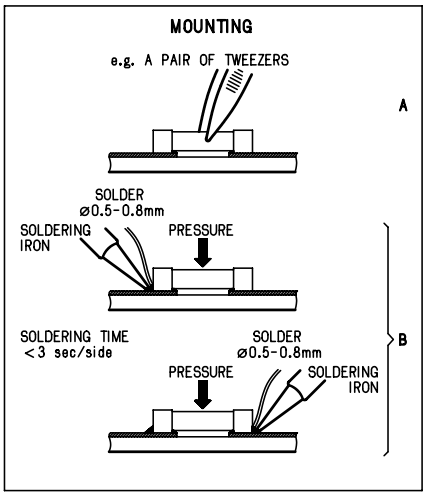
Anti-static table mat - large 1200x650x1.25mm ... 4822 466 10953
Anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connector box (1MΩ) 4822 320 11307
Extension cable
(to connect wristband to conn. box) 4822 320 11305
Connecting cable
(to connect table mat to conn. box) 4822 320 11306
Earth cable (to connect product to mat or box) 4822 320 11308

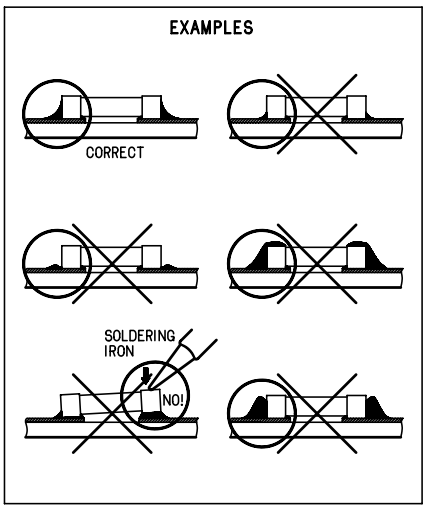
HANDLING CHIP COMPONENTS











ESD

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

GB Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

S Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

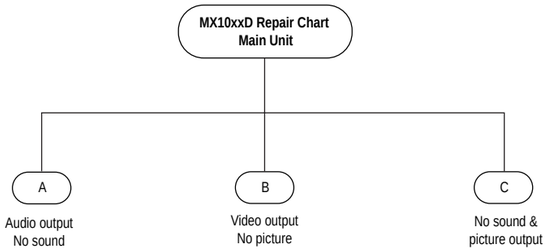
SF Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

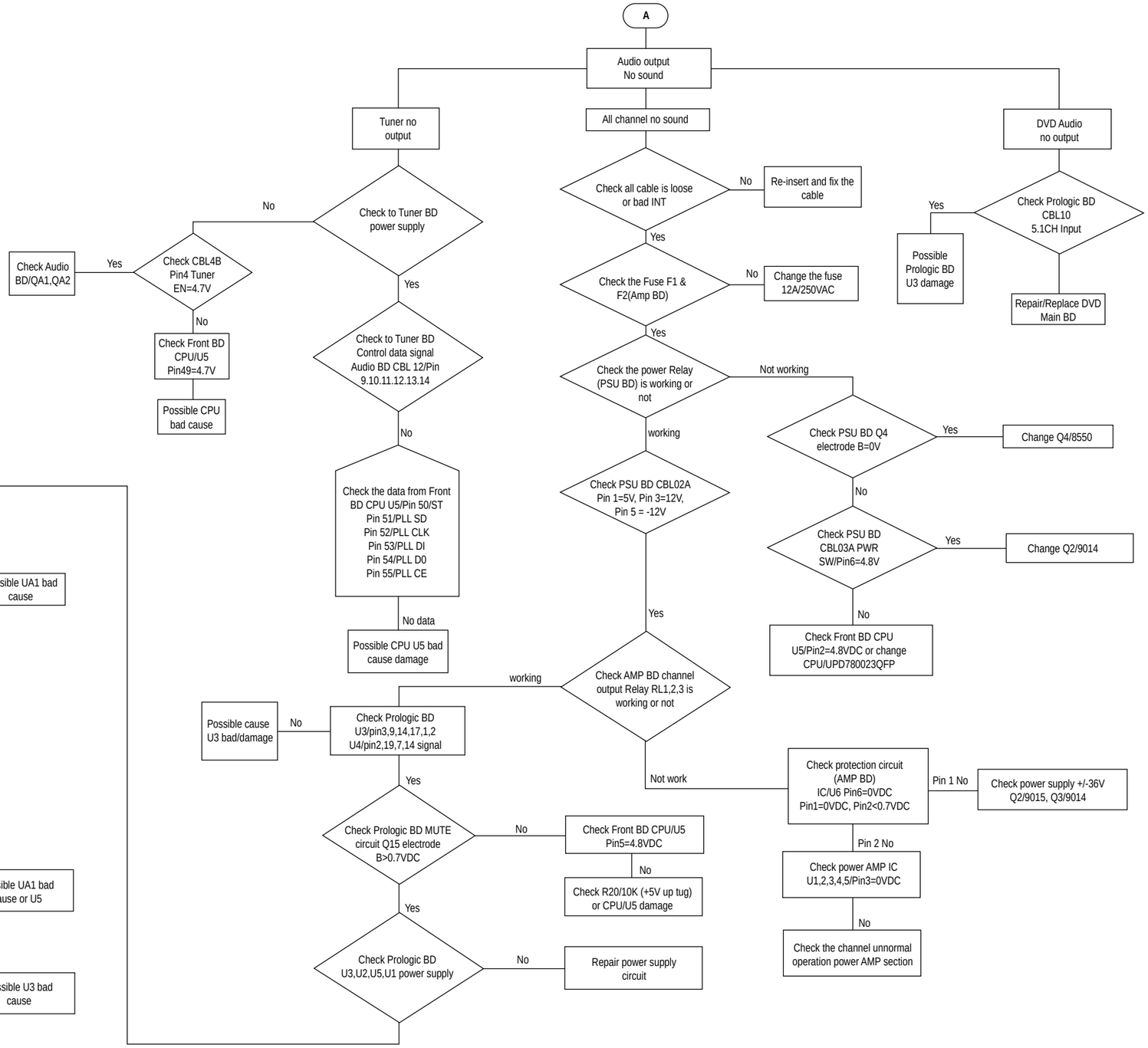
DK Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

MX10xxD REPAIR CHART

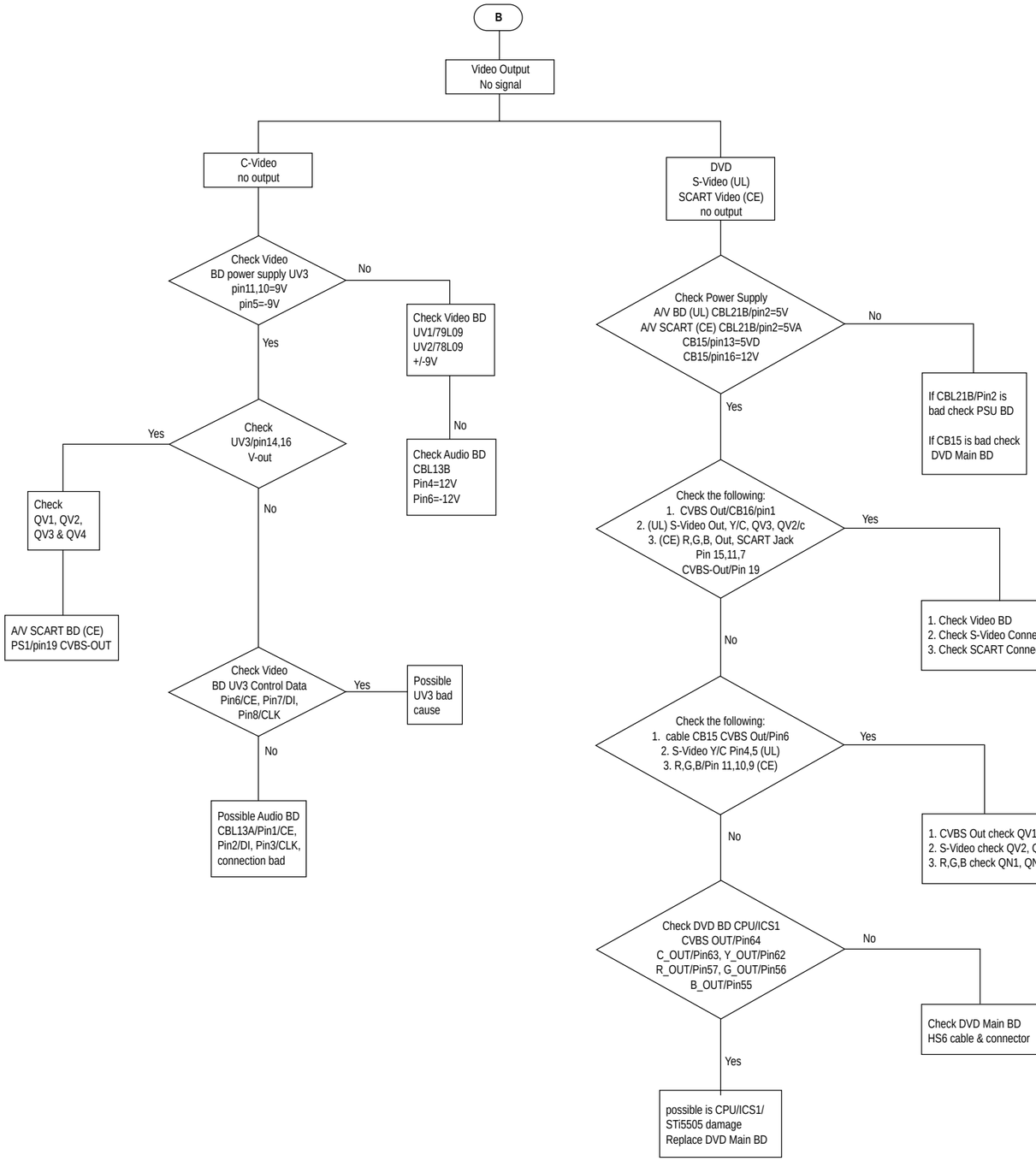


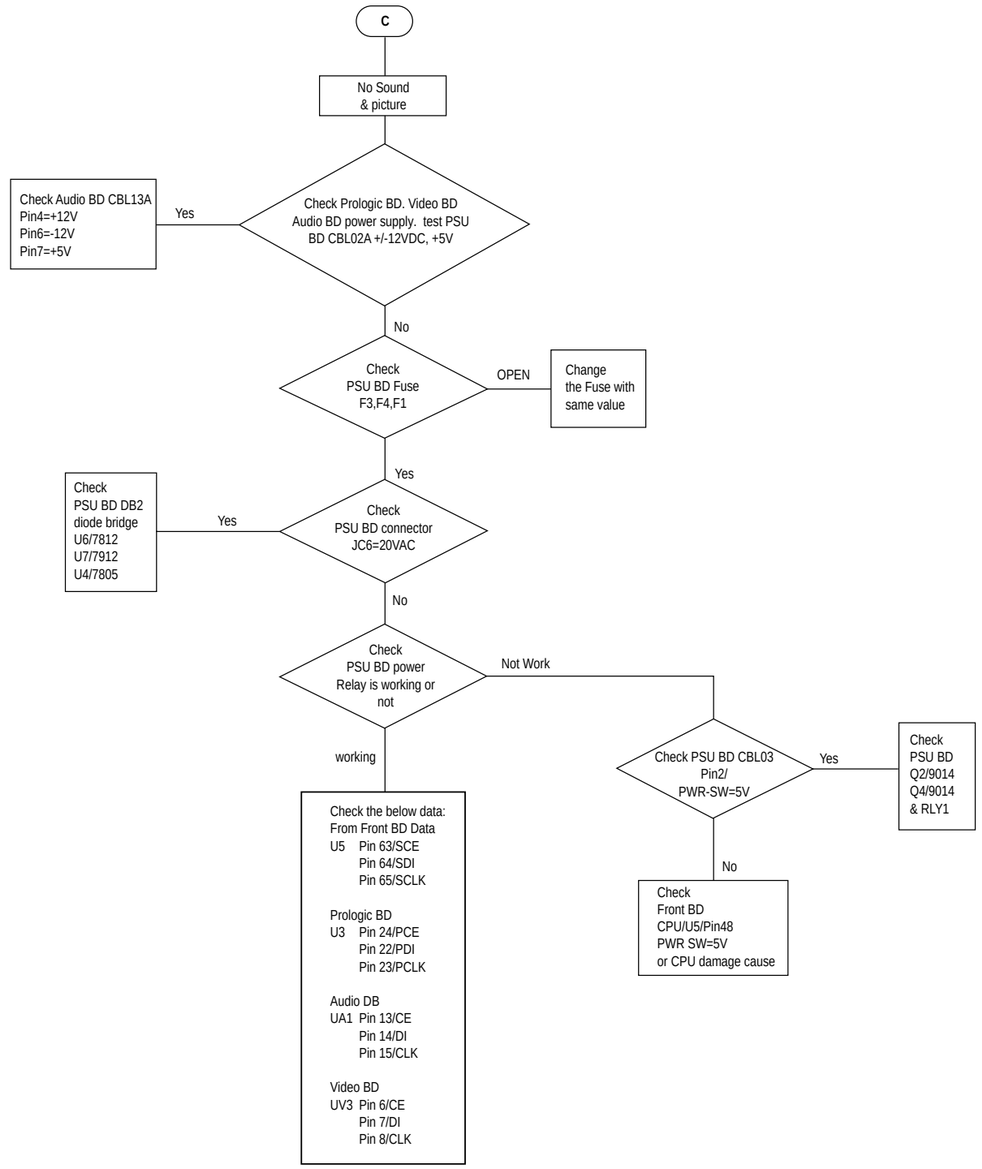
2-1



2-2

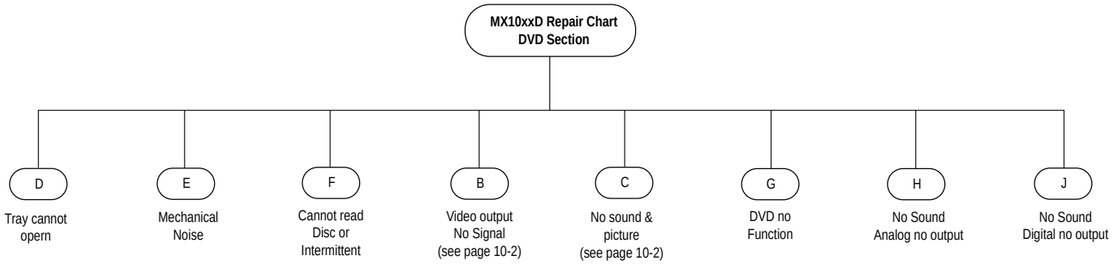
MX10xxD REPAIR CHART

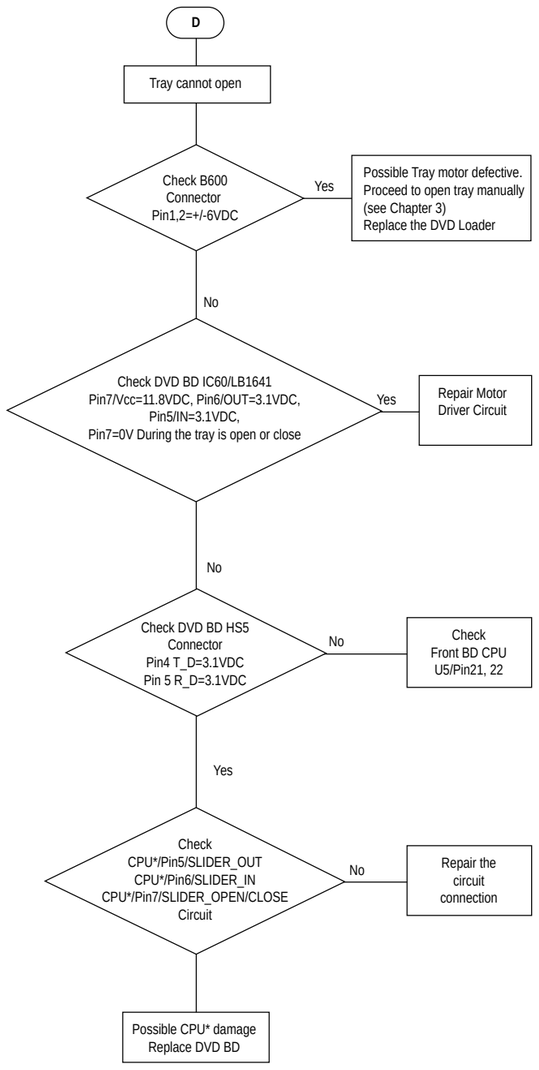


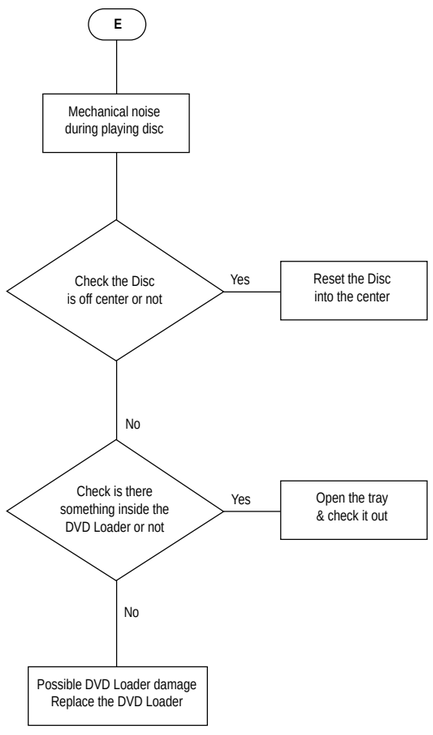


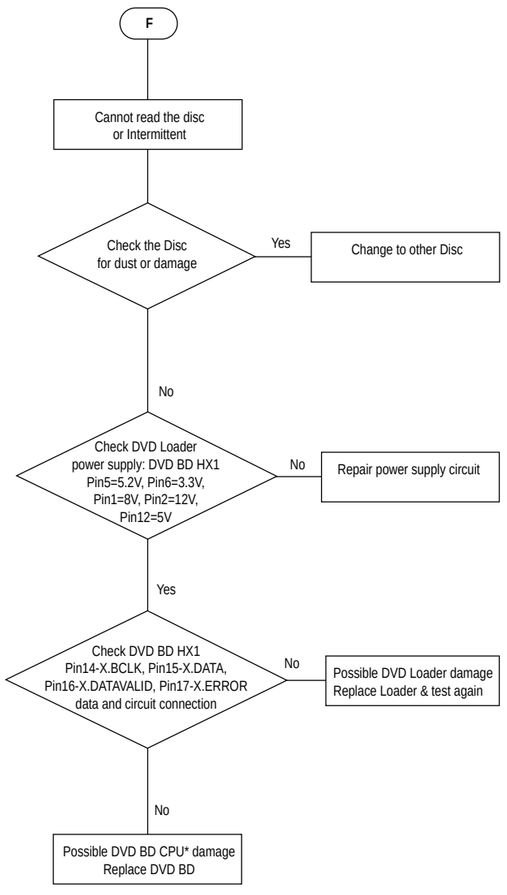
2-3

MX10xxD REPAIR CHART - DVD SECTION




D
Tray cannot open
Check B600 Connector Pin1,2=+/-6VDC
Yes
Possible Tray motor defective. Proceed to open tray manually (see Chapter 3) Replace the DVD Loader
No
Check DVD BD IC60/LB1641 Pin7/Vcc=11.8VDC, Pin6/OUT=3.1VDC, Pin5/IN=3.1VDC, Pin7=0V During the tray is open or close
Yes
Repair Motor Driver Circuit
No
Check DVD BD HS5 Connector Pin4 T_D=3.1VDC Pin 5 R_D=3.1VDC
No
Check Front BD CPU U5/Pin21, 22
Yes
Check CPU*/Pin5/SLIDER_OUT CPU*/Pin6/SLIDER_IN CPU*/Pin7/SLIDER_OPEN/CLOSE Circuit
No
Repair the circuit connection
Possible CPU* damage Replace DVD BD


E
Mechanical noise during playing disc
Check the Disc is off center or not
Yes
Reset the Disc into the center
No
Check is there something inside the DVD Loader or not
Yes
Open the tray & check it out
No
Possible DVD Loader damage Replace the DVD Loader


F
Cannot read the disc or Intermittent
Check the Disc for dust or damage
Yes
Change to other Disc
No
Check DVD Loader power supply: DVD BD HX1 Pin5=5.2V, Pin6=3.3V, Pin1=8V, Pin2=12V, Pin12=5V
No
Repair power supply circuit
Yes
Check DVD BD HX1 Pin14-X.BCLK, Pin15-X.DATA, Pin16-X.DATAVALID, Pin17-X.ERROR data and circuit connection
No
Possible DVD Loader damage Replace Loader & test again
No
Possible DVD BD CPU* damage Replace DVD BD

*Note: BD = Board
CPU = DVD BD ICS1/STi5505
DVD BD = DVD Main Board

DVD Main Board Connector Data

1. DVD Main Board Conn. HX1 (To Mechanical Loader) Note 1

Pin no.	Function	Voltage DC/V
1	+12VT	11.9V
2	+12VS	11.9V
3	GND	0V
4	GND	0V
5	5VD	5.0V
6	3.3V	3.2V
7	5GND	0V
8	GND	0V
9	SDA	4.7V
10	SCL	4.8V
11	IRD2	3.2V
12	5V RESET	4.7V
13	GND	0V
14	EXT BCLK	1.56V
15	EXT DATA	0.25V
16	EXT DATA VALID	0.35V
17	EXT PSTART/ ERROR	0V
18	GND	0V
19	NC	-

2. DVD Main Board Conn. JP1 (To PSU Board) Note 2

Pin no.	Function	Voltage DC/V
1	NC	-
2	3.3V	3.2V
3	5VD	5.1V
4	GND	0V
5	GND	0V
6	5VA	5.0V
7	12V	11.9V
8	5GND	0V
9	12VS	11.9V
10	12VT	11.9V

3. DVD Main Board Conn. HS6 (To A/V Board) Note 3

Pin no.	Function	Voltage DC/V
1	12V	11.9V
2	5VA	5V
3	16/9	4V
	4/3	0V
4	5VD	5.0V
5	GND	0V
6	RED	3.2V
7	GREEN	3.2V
8	BLUE	3.2V
9	GND	0V
10	GND	0V
11	CVBS	0.73V
12	C	0.52V
13	Y	0.67V
14	GND	0V
15	SPDIF	1.6V
16	GND	0V

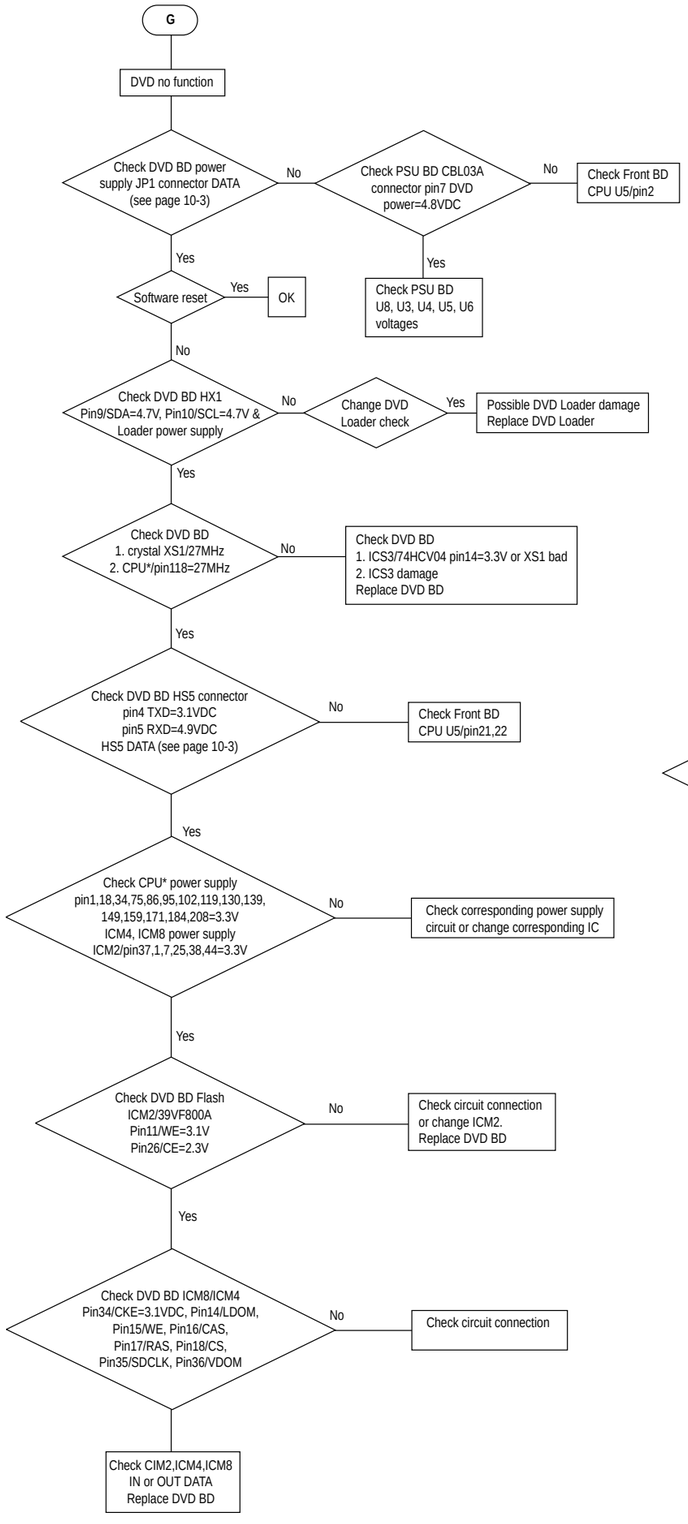
4. DVD Main Board Conn. HS5 (To Front Board) Note 4

Pin no.	Function	Voltage DC/V
1	GND	0V
2	CTS	0V
3	RTS	0V
4	TXD	3.0V
5	RXD	4.9V
6	5VD	4.9V

Note:
1. When the voltages of conn. HX1 are as per table the problem in the Loader, otherwise the problem is in the DVD Main board.
2. When the voltages of conn. JP1 are as per table the problem in the DVD Main board, otherwise the problem is in the PSU board.
3. When the voltages of conn. HS6 are as per table the problem in the DVD Main board, otherwise the problem is in the A/V board.
4. When the voltages of conn. HS5 are as per table the problem in the DVD Main board, otherwise the problem is in the Front board.

2-4

MX10xxD REPAIR CHART - DVD SECTION


G
DVD no function
Check DVD BD power supply JP1 connector DATA (see page 10-3)
No
Check PSU BD CBL03A connector pin7 DVD power=4.8VDC
No
Check Front BD CPU U5/pin2
Yes
Check PSU BD U8, U3, U4, U5, U6 voltages
Yes
Software reset
Yes
OK
No
Check DVD BD HX1 Pin9/SDA=4.7V, Pin10/SCL=4.7V & Loader power supply
No
Change DVD Loader check
Yes
Possible DVD Loader damage Replace DVD Loader
Yes
Check DVD BD 1. crystal XS1/27MHz 2. CPU*/pin118=27MHz
No
Check DVD BD 1. ICS3/74HCV04 pin14=3.3V or XS1 bad 2. ICS3 damage Replace DVD BD
Yes
Check DVD BD HS5 connector pin4 TXD=3.1VDC pin5 RXD=4.9VDC HS5 DATA (see page 10-3)
No
Check Front BD CPU U5/pin21,22
Yes
Check CPU* power supply pin1,18,34,75,86,95,102,119,130,139, 149,159,171,184,208=3.3V ICM4, ICM8 power supply ICM2/pin37,1,7,25,38,44=3.3V
No
Check corresponding power supply circuit or change corresponding IC
Yes
Check DVD BD Flash ICM2/39VF800A Pin11/WE=3.1V Pin26/CE=2.3V
No
Check circuit connection or change ICM2. Replace DVD BD
Yes
Check DVD BD ICM8/ICM4 Pin34/CKE=3.1VDC, Pin14/LDOM, Pin15/WE, Pin16/CAS, Pin17/RAS, Pin18/CS, Pin35/SDCLK, Pin36/VDOM
No
Check circuit connection
Check CIM2,ICM4,ICM8 IN or OUT DATA Replace DVD BD
H
No Sound Analog no output
One of the channel no output
Check channel mute circuit
No
Repair MUTE circuit
Yes
Check channel pre-amp circuit
No
Repair pre-amp circuit
Yes
Check channel D/A change circuit
No
Repair D/A decode circuit
Yes
Check corresponding channel DATA signal pin44/pcm-out0=FL+FR pin24/pcm-out1=C+SUB pin21/pcm-out2=SL+SR
Yes
Repair corresponding channel supply power
No
Possible CPU* damage Replace DVD BD
All channel no output
Check supply power 1. CPU pin48,49 VDDA=3.3V 2. ICA7/7805/5VA (D/A change power supply) 3. QA13 (pre-amp supply +12V)
No
Check RS29/RS78 is 5V or not
No
1. CPU* damage 2. ICA7/7805 damage Replace DVD BD
Yes
Check D/A change CPU*/PCM_LRCLK/Pin46 /PCM_CLK/Pin45 /PCM_SCLK/Pin43 /PCM-OUT/Pin21,24,44
Yes
Check MUTE circuit ICS1/A-MUTE/Pin199 MUTE=L BY PASS=H
No
Possible CPU* damage Replace DVD BD
J
No Sound Digital no output
Check A/V S-Video BD (UL) QA4/electrode E A/V SCART BD (CE) QA4/electrode E Signal output
Yes
Possible Optical or coaxial damage or connection cable damage
No
Check DVD BD CPU*/Pin47 SPDIF Signal output
Yes
Check A/V BD S-Video / SCART QA3, QA4
No
Possible CPU* damage Replace DVD BD

*Note: BD = Board
CPU = DVD BD ICS1/STi5505
DVD BD = DVD Main Board

2-5

ADDITIONAL INFORMATION FOR DVD SECTION

1. Clock Check

Clock name	Test point	Frequency	Figure	Remarks
27MHz	Pin 118 (ICS1)	27MHz	1-a	
PCM CLK	Pin 45 (ICS1)	11.28MHz	1-b	

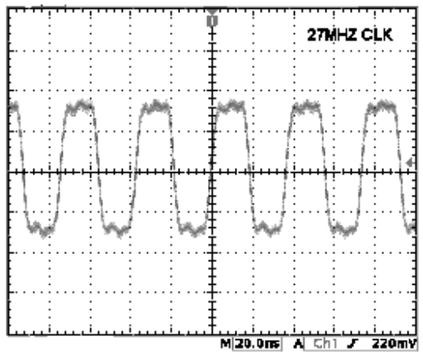


Figure 1-a

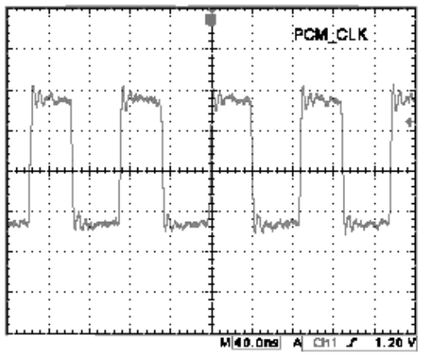


Figure 1-b

2. Memory Check

Clock name	Test point	Frequency	Figure	Remarks
SD CLOCK	Pin 76 (ICS1)	108MHz	2-a	

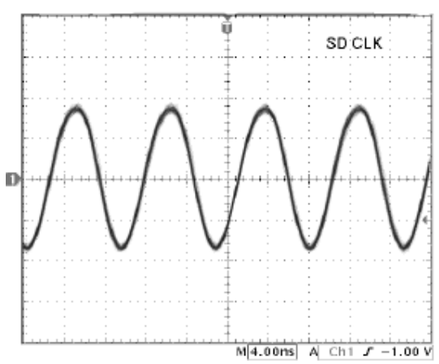


Figure 2-a

3. DVD Interface

Test name	Test point	Figure	Remarks
XERROR/P-START	Pin 39 (ICS1)	-	High/Low
XP-CLOCK/D-VALID	Pin 38 (ICS1)	3-a	
XB-CLOCK/BB-CLOCK	Pin 37 (ICS1)	3-b	
XDATA	Pin 36 (ICS1)	3-c	

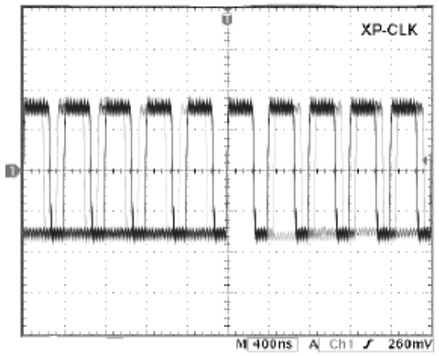


Figure 3-a

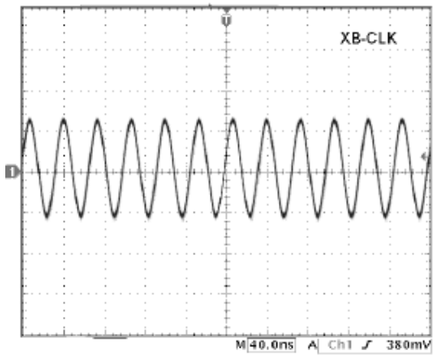


Figure 3-b

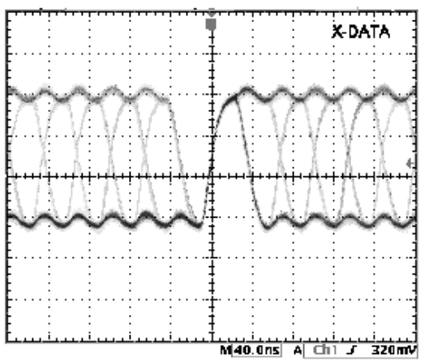


Figure 3-c

4. Audio LR - Clock Switch Check

Clock Frequency	Test point	Remarks
11.2896MHz, 0.02%	Pin 46 (ICS1)	44.1kHz sample rate
12.288MHz, 0.02%	Pin 46 (ICS1)	48kHz sample rate

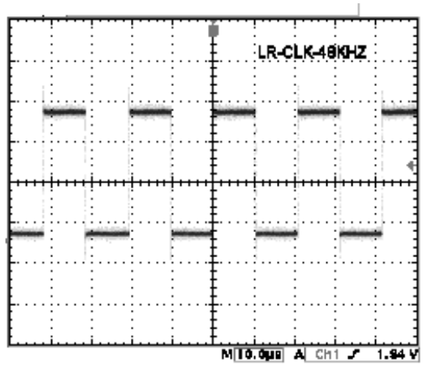


Figure 4

5. DVD Audio Clock 5.1 CH Audio Test Signal

Test name	ICS1 pin	Test point	Condition	Figure
SPDIF	47	after RS35	PLAY	5-a
PCM CLK	45	after RS27	PLAY	5-b
PCM-OUT-0	44	after RS28	PLAY	5-c
S CLOCK	43	after RS32	PLAY	5-d
PCM-OUT-1	24	after RS33	PLAY	5-e
PCM-OUT-2	21	after RS34	PLAY	5-f

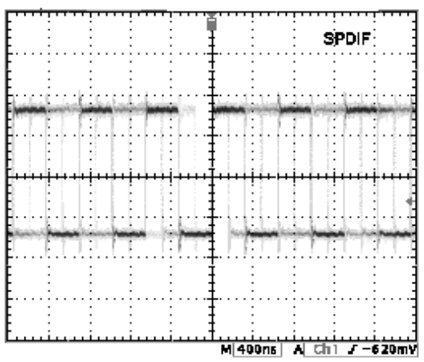


Figure 5-a

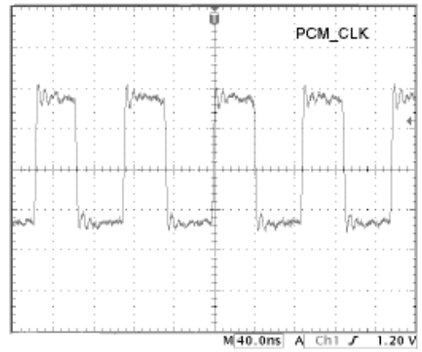


Figure 5-b

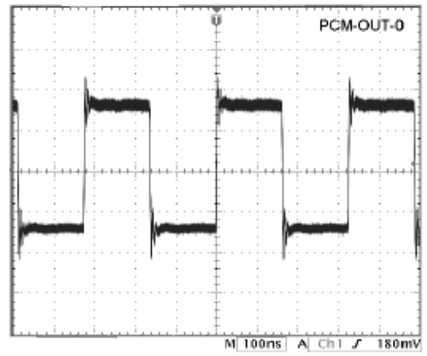


Figure 5-c

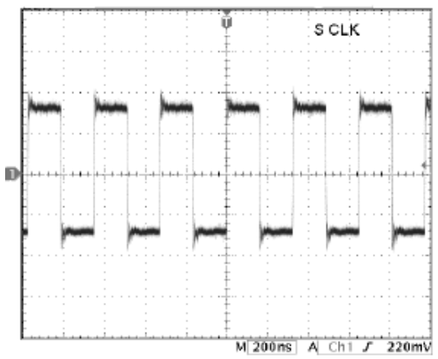


Figure 5-d

2-6

ADDITIONAL INFORMATION FOR DVD SECTION

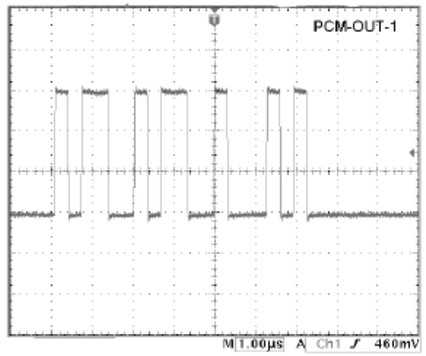


Figure 5-e

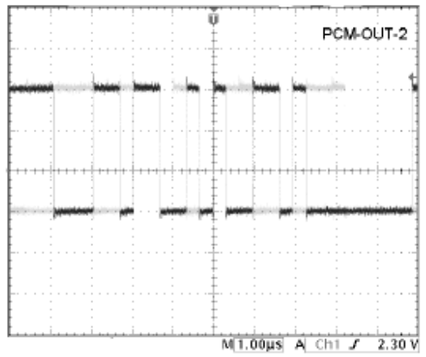


Figure 5-f

6. Control In / Out

Test name	Test point	Condition	Figure
RXD	conn. HS5-RXD	FUNCTION PRESS	6-a
TXD	conn. HS5-TXD	FUNCTION PRESS	6-b

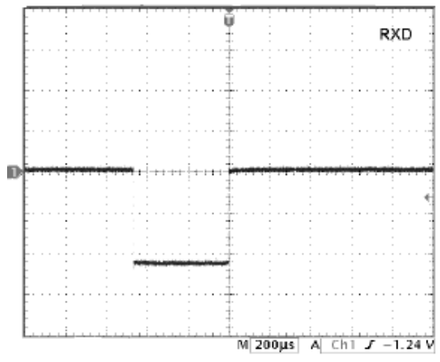


Figure 6-a

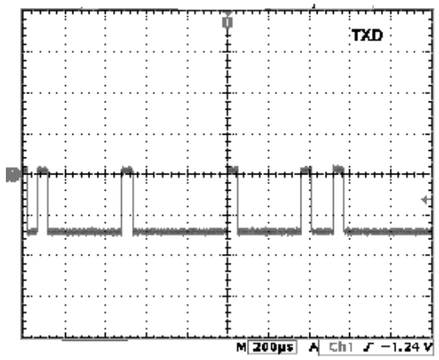


Figure 6-b

7. Video Output Check Playback TDV540 Color Bar

Test name	Test point	Condition	Figure
RED OUT	conn. HS6-RED	PLAY	7-a
GREEN OUT	conn. HS6-GREEN	PLAY	7-b
BLUE OUT	conn. HS6-BLUE	PLAY	7-c
CVBS OUT	conn. HS6-CVBS	PLAY	7-d
C OUT	conn. HS6-C	PLAY	7-e
Y OUT	conn. HS6-Y	PLAY	7-f

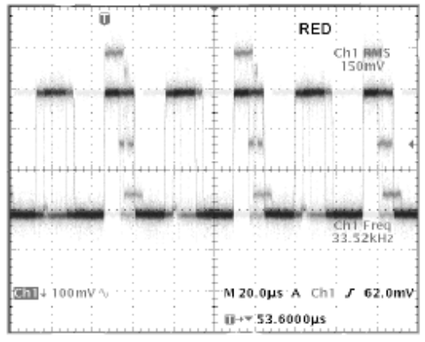


Figure 7-a

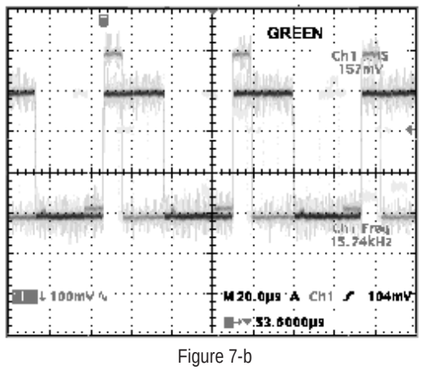


Figure 7-b

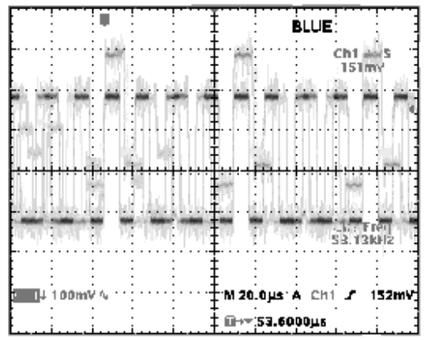


Figure 7-c

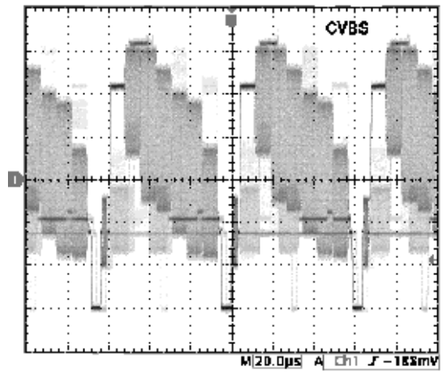


Figure 7-d

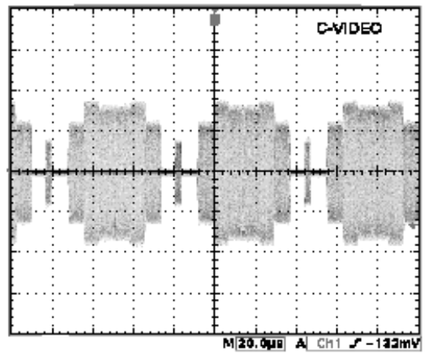


Figure 7-e

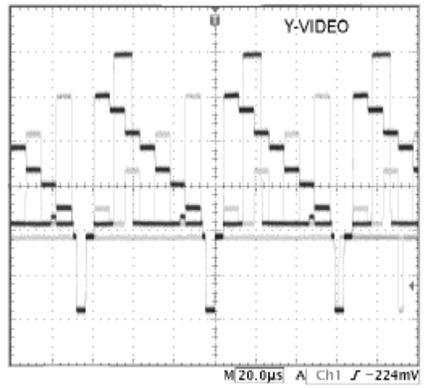


Figure 7-f

8. Tray Open / Close - driver LB1641 output

Test name	Test point	Value	Remarks
SLIDER IN	Pin 5 (IC60)	4.3V +/- 2.0V	Tray closed
SLIDER OUT	Pin 6 (IC60)	3V +/- 1.0V	Tray is opening

9. DVD Reset (fig. 9)

400msec. from 0V to 3.3V, if the reset input does not go high then check the circuit ICS1 pin 29.

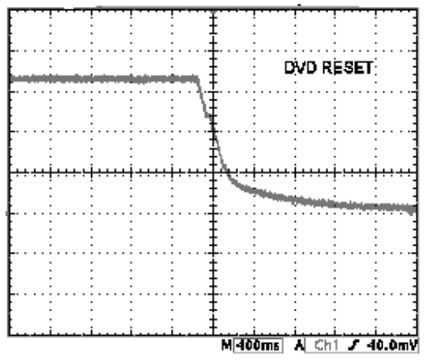


Figure 9

DISMANTLING INSTRUCTIONS

Dismantling of the Front Panel Assembly

1) Open the DVD Tray by using the Open/Close Button while the Set is ON and disconnect the mains supply after removing the Tray Cover.

   Note: If this is not possible, the DVD Tray has to be open manually.

   To manually open the DVD Tray, place the set on its right side. Insert a mini flat screw driver into the slot and slide it upwards as shown in figure 2 until the Tray moves out of the Front Panel.

2) Return the set to its upright position and remove the Tray Cover as shown in Figure 1 and close the tray manually by pushing it back in.

3) Loosen 9 screws and remove the Top Cover by lifting the rear portion upwards before sliding it out towards the rear.
   - 5 screws on the rear
   - 2 screws each on the left & right side

4) Loosen 5 screws & lift up the top edge of Front Panel assembly to free some catches (see figure 3) before sliding it out towards the front.
   - 3 screws on the bottom
   - 1 screw each on the left & right side

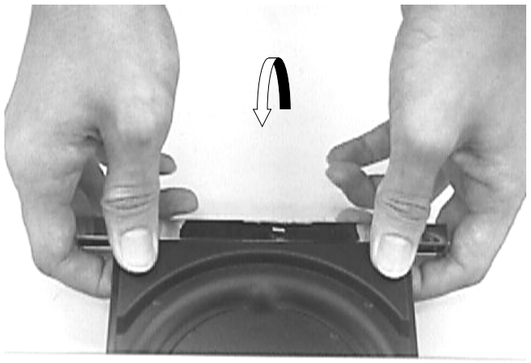
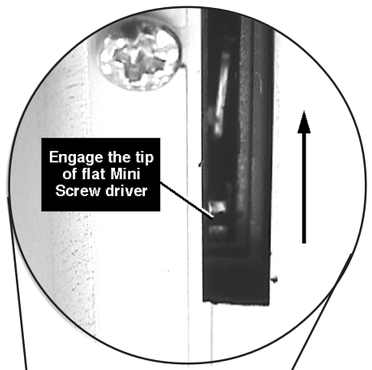


Figure 1



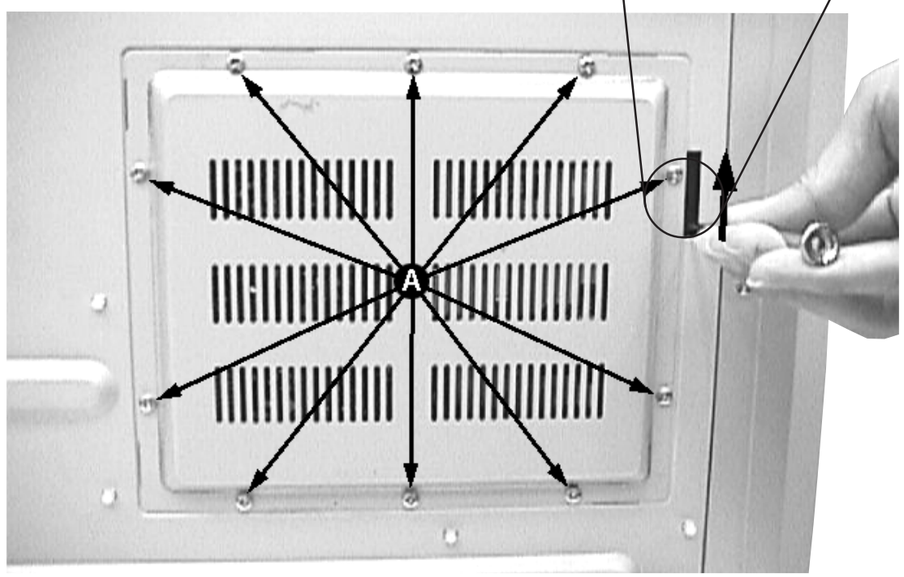


Figure 2

Dismantling of the DVD Module and/or Digital Board

1) Loosen 10 screws A to remove the DVD Digital Board cover as shown in figure 2.

   Note: Use step 3 to remove the Digital Board without dismantling the complete DVD Module.

2) Loosen 6 screws B (including 2 metal mounting brackets) and 2 catches C1 as shown in figure 4 and 5. Disconnect 4 cables (see figure 6) and remove the DVD Module by lifting its rear end upward and sliding it out of the Front Metal plate.

   Note: - Care should be taken not to entangle / damage the grounding springs along the DVD enclosure wall.
   - Do not loose the 2 metal mounting brackets.

3) Loosen 4 screws D (see figure 6) and all connectors to remove the Digital Board.

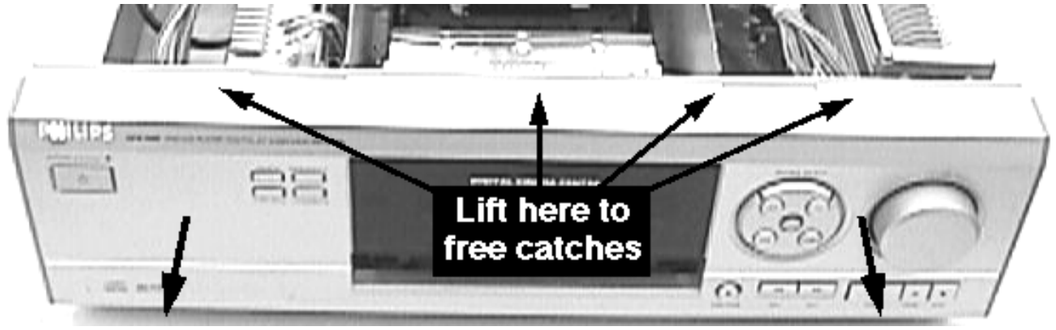


Figure 3

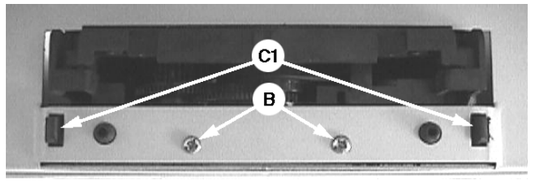


Figure 4

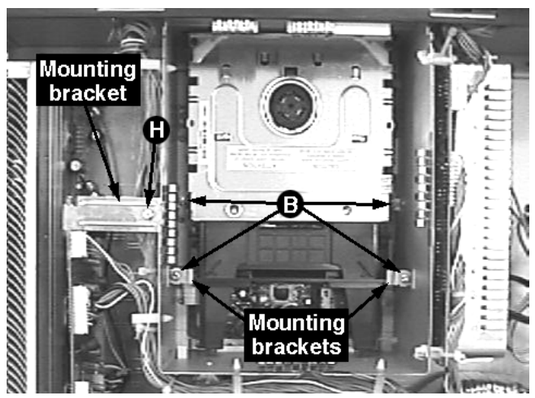


Figure 5

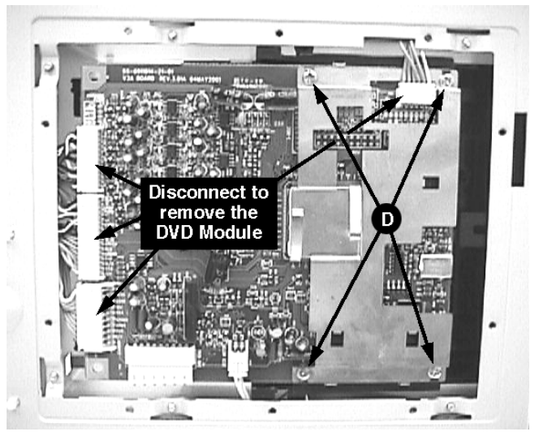


Figure 6

Dismantling the Tuner, Audio Switch, Video Switch, Pro-Logic and AV Board (Refer figure 8)

1) Loosen 2 screws E on the Rear panel to remove the Tuner Board.

2) Loosen 2 screws F on the Rear panel to remove the Audio Switch Board.

3) Loosen 3 screws G on the Rear panel to remove the Video Switch Board.

4) Loosen 3 screws H to remove the Pro-Logic Board.
   - 2 screws on the Rear panel
   - 1 screw (including metal mounting bracket) on the inside of the set as shown in figure 5.

5) Loosen 4 screws J on the Rear panel to remove the AV Output Board.

Dismantling the Regulator Board

1) Release 4 catches of the pc board supporter with a long nose plier as shown in figure 7.

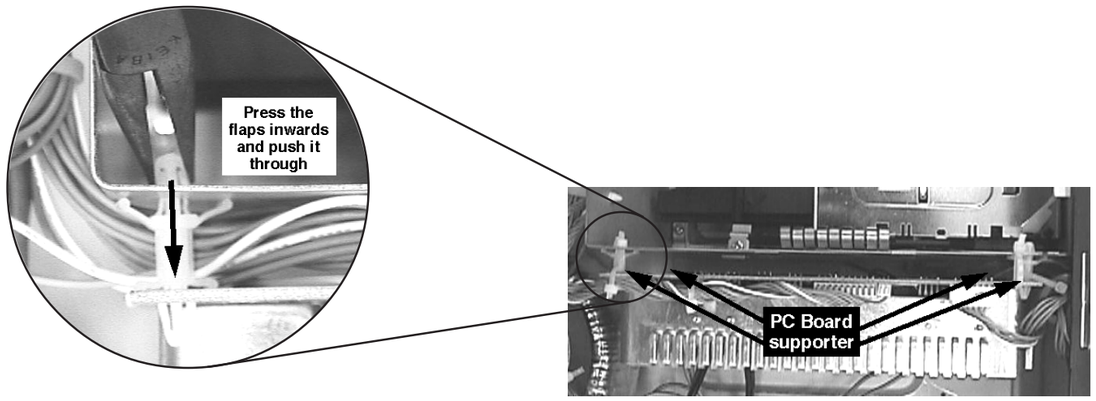


Figure 7

Dismantling the Power Amplifier Board

1) With the set upside down, release 5 catches of the pc board supporter with a long-nose plier as shown in figure 9.

2) With the set upright again, remove the Pro-Logic Board as describe above.

3) Loosen 4 screws L mounting the heatsink to the bottom plate as shown in figure 9.

4) Loosen 7 screws K on the Rear Panel (see figure 8)
   - 4 screws for the Speaker sockets
   - 3 screws to detach the Rear Panel from the bottom plate.

3-2

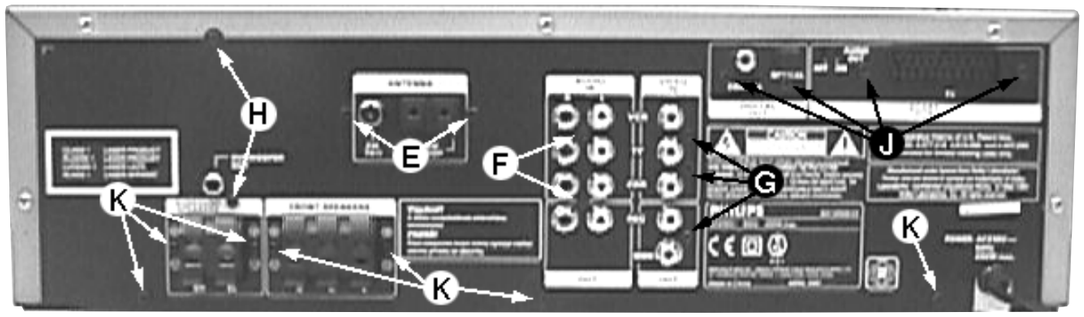


Figure 8

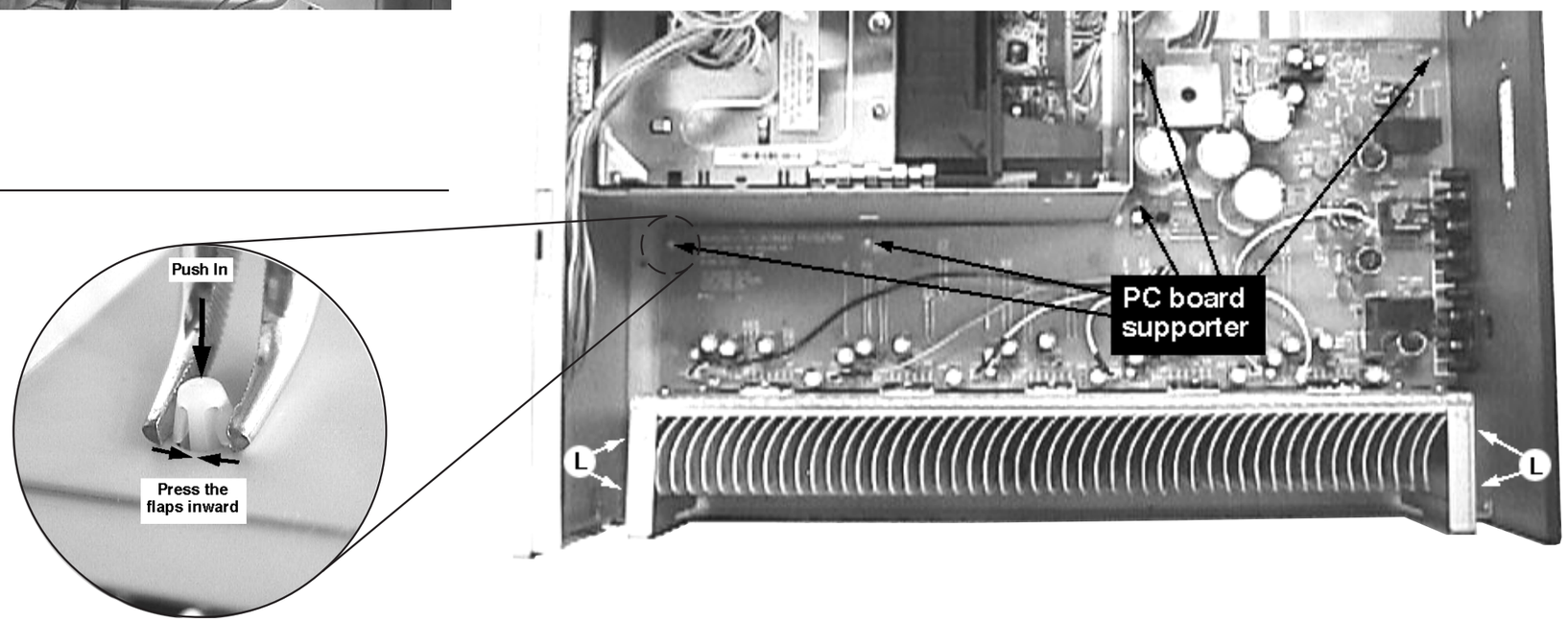
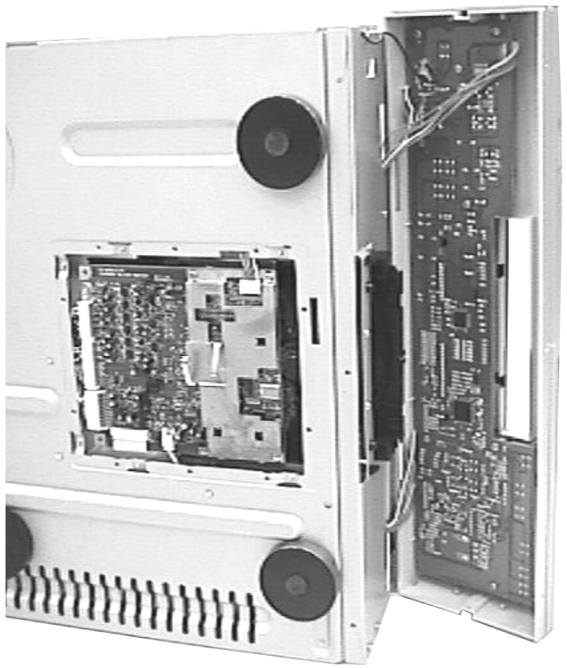
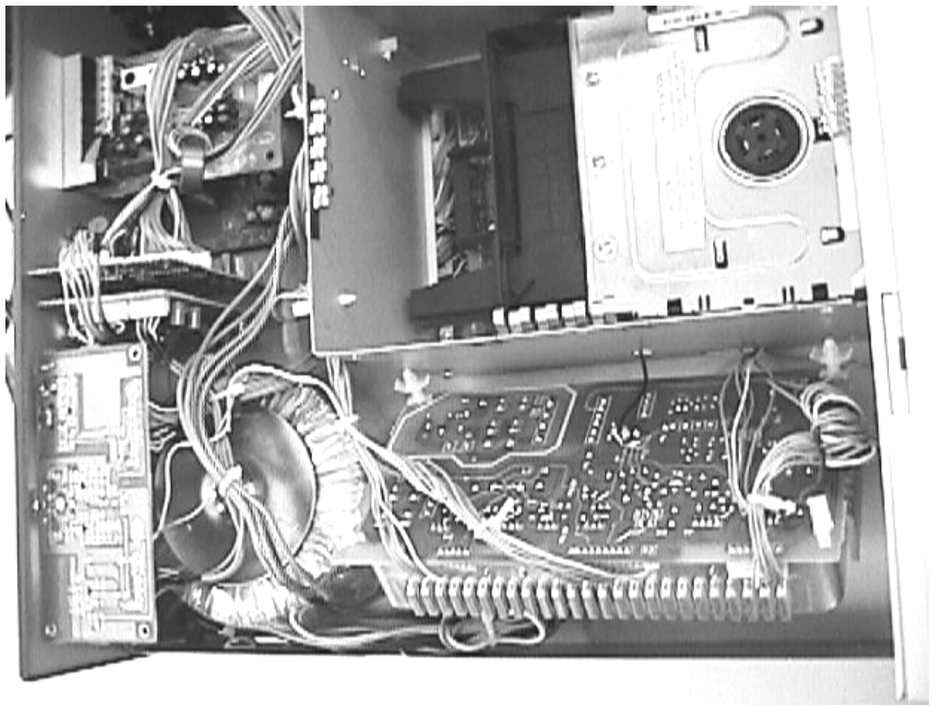


Figure 9

Service pos A



Service pos B

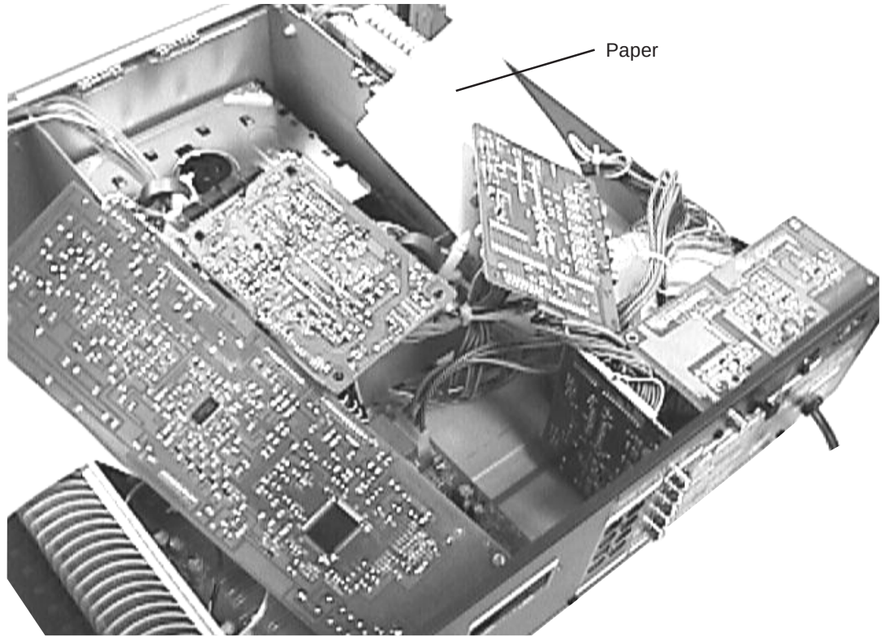


Note: In some service positions the components or copper patterns of one board may risk touching its neighbouring pc boards or metallic parts. To prevent such short-circuit use a piece of hard paper or other insulating material between them.

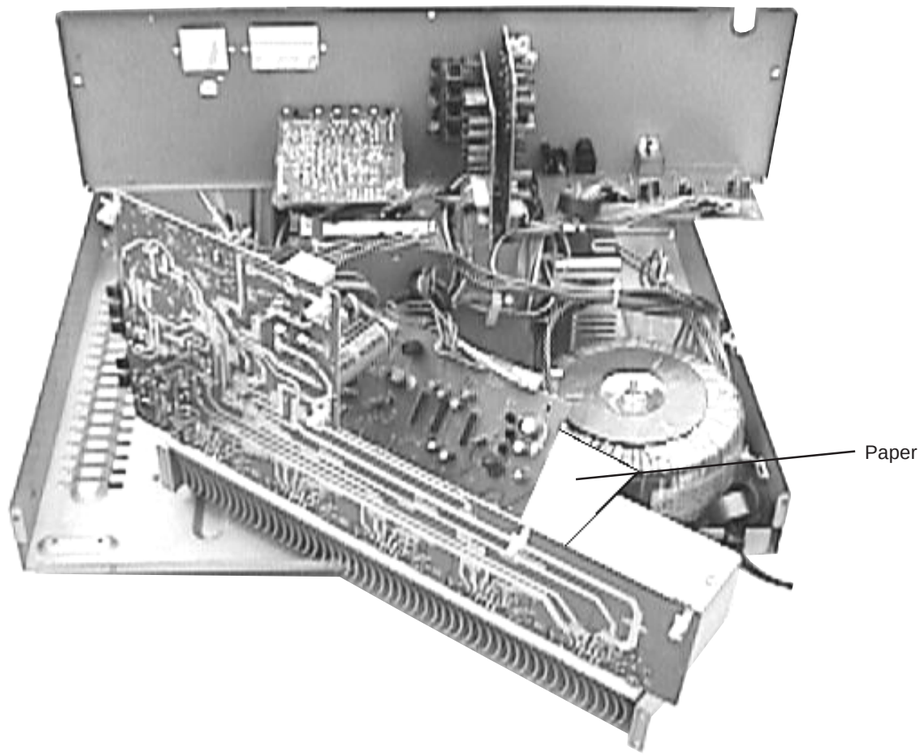
3-3

SERVICE POSITIONS & REPAIR HINTS

Service pos C

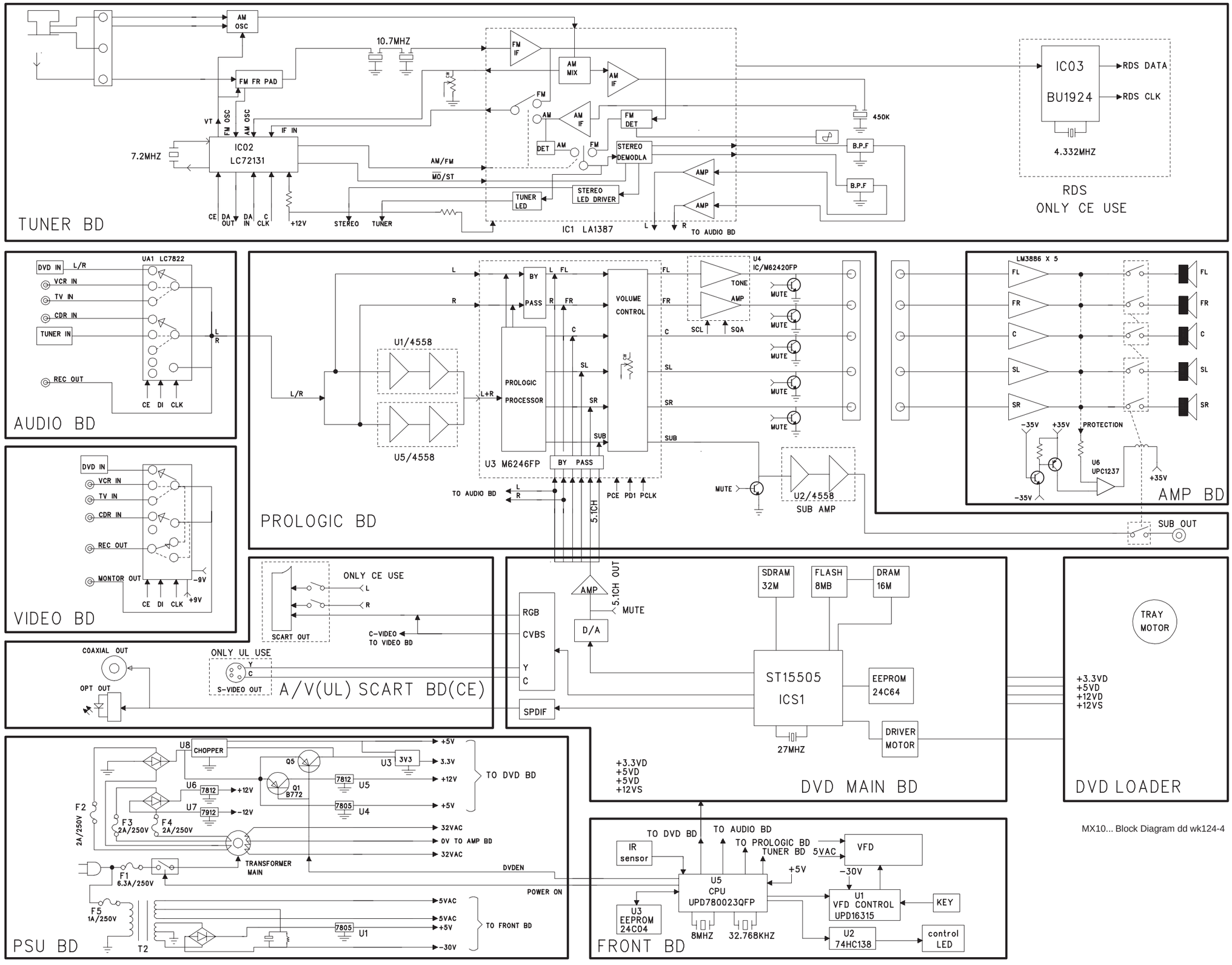


Service pos D



4-1

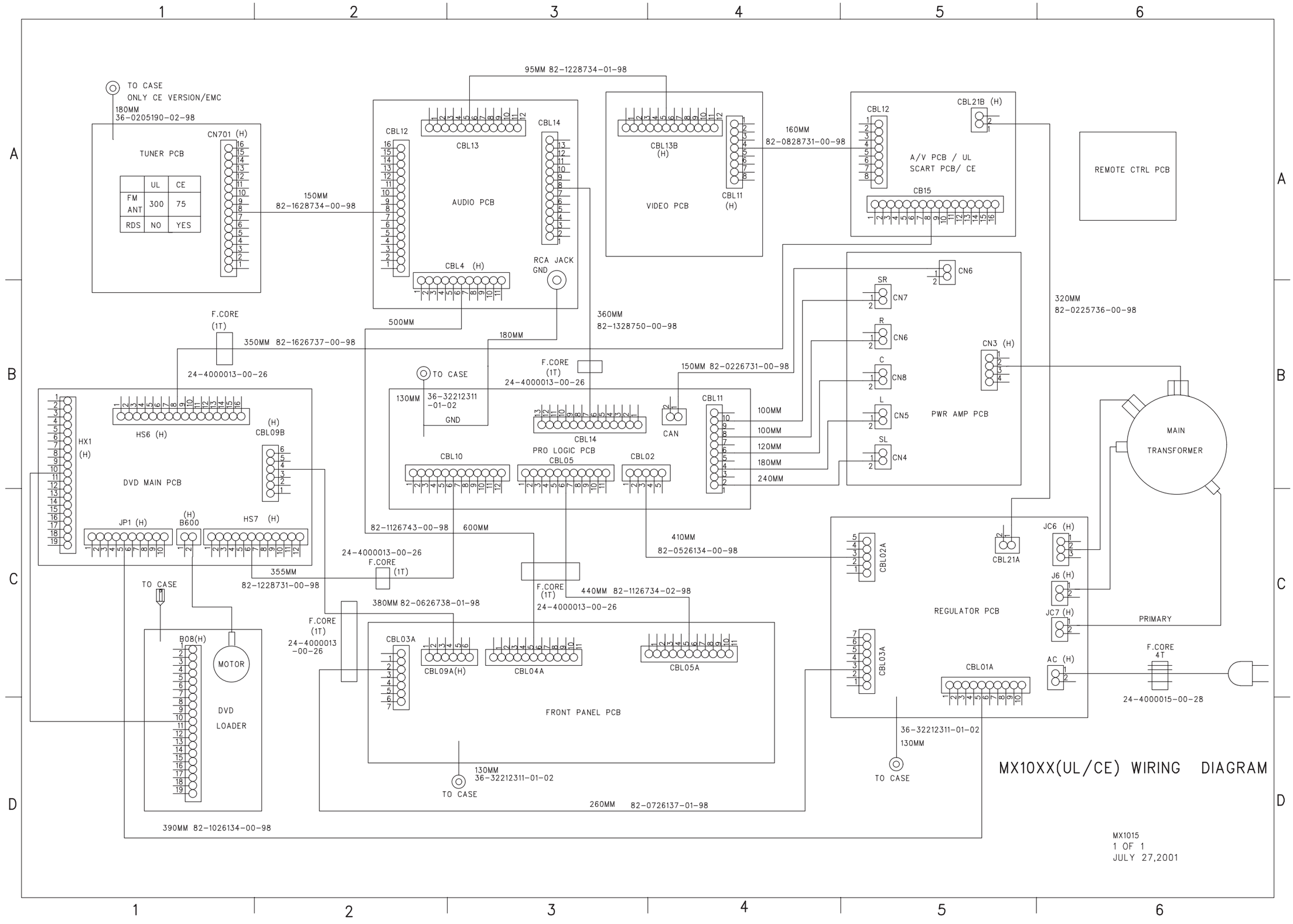
SET BLOCK DIAGRAM



MX10... Block Diagram dd wk124-4

4-2

SET WIRING DIAGRAM

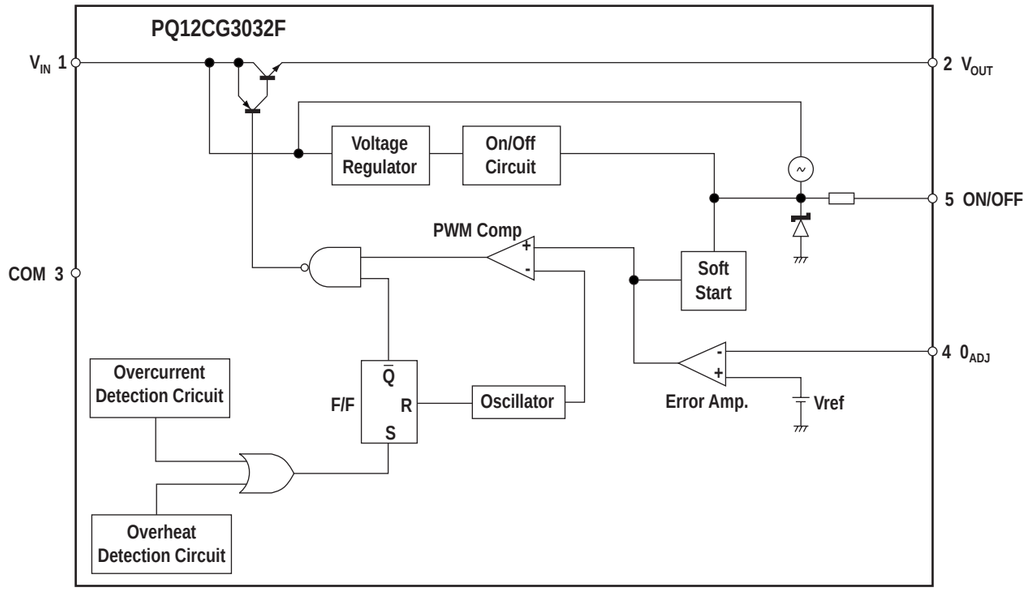


PSU BOARD

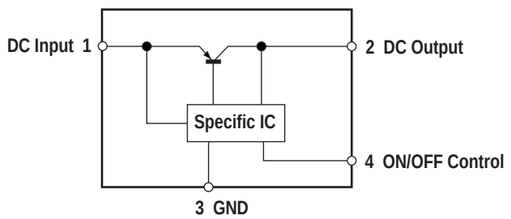
TABLE OF CONTENTS

PQ12CG3032F & PQ3RD13 Internal Block 5-1
Components Layout + Voltages 5-2
Circuit Diagram 5-3
Electrical parts list 5-4

PQ12CG3032F Internal Block



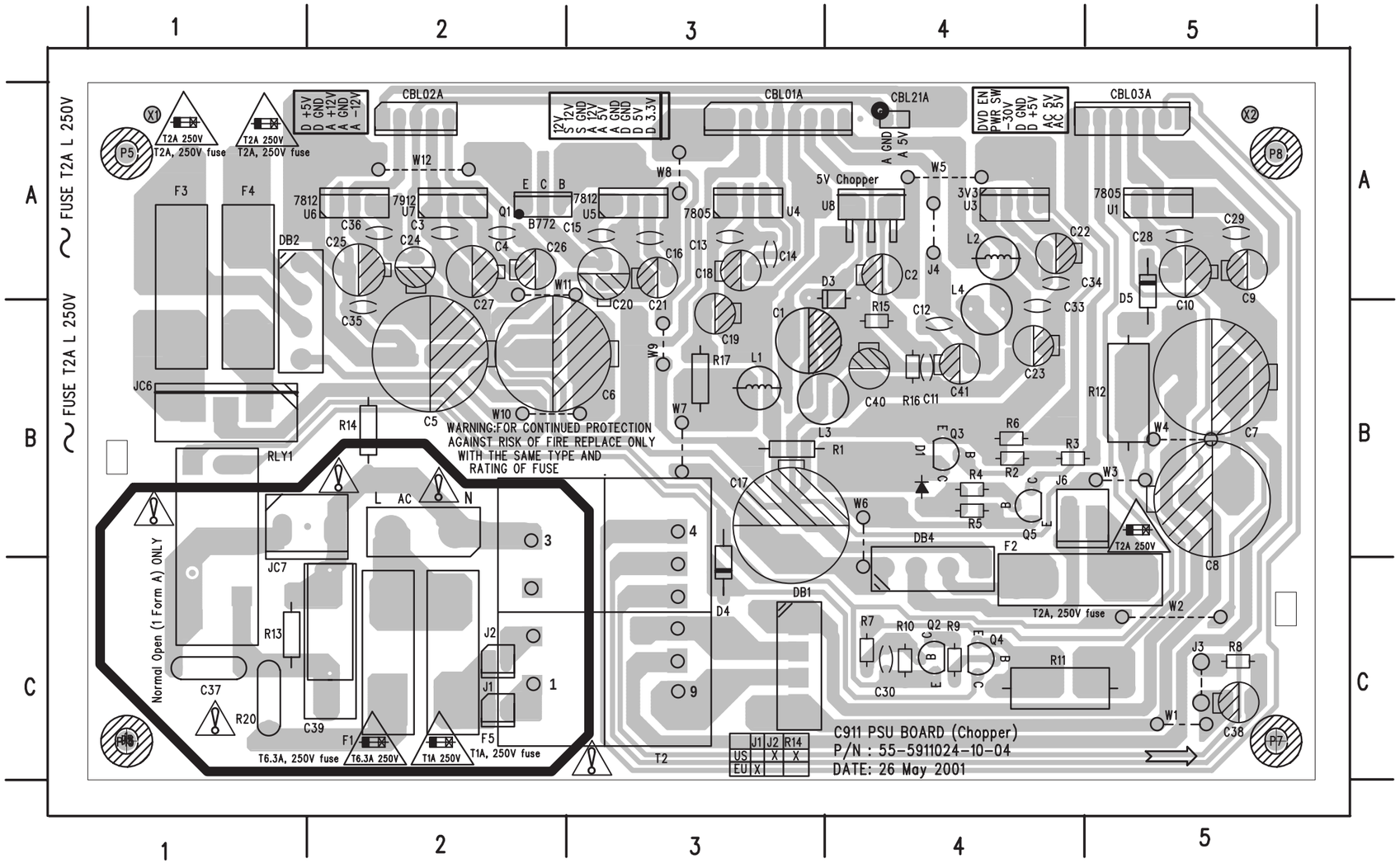
PQ3RD13 Internal Block



5-2

COMPONENTS LAYOUT

AC	B2	C16	A3	C23	B4	C30	C4	C4	A2	CBL1	A3	D5	A5	F5	B2	L2	A4	R1	B3	R17	B3	R8	C5	U5	A3	W2	C5
C1	B3	C17	B3	C24	A2	C33	B4	C40	B4	CBL2	A2	DB1	C3	J1	C2	L3	B3	R10	C4	R2	B4	R9	C4	U6	A2	W3	B5
C10	A5	C18	A3	C25	A2	C34	B4	C41	B4	CBL21	A4	DB2	A1	J2	C2	L4	B4	R11	C4	R20	C1	RLY1	B1	U7	A2	W4	B5
C11	B4	C19	B3	C26	A2	C35	B2	C5	B2	CBL3	A5	DB4	C4	J3	C5 wire line	Q1	A2	R12	B5	R3	B4	T1		U8	A4	W5	A4
C12	B4	C2	A4	C27	A2	C36	A2	C6	B2	CON4	POWER AMP BD	F1	C2	J4	A4 wire line	Q2	C4	R13	C1	R4	B4	T2	C3	W1	C5	W6	B4
C13	A3	C20	A3	C28	A5	C37	C1	C7	B5	D1	B4	F2	C4	JC6	B1	Q3	B4	R14	B2	R5	B4	U1	A5	W10	B2	W7	B3
C14	A3	C21	A3	C29	A5	C38	C5	C8	B5	D3	A4	F3	A1	JC7	B1	Q4	C4	R15	B4	R6	B4	U3	A4	W11	A2	W8	A3
C15	A3	C22	A4	C3	A2	C39	C2	C9	A5	D4	C3	F4	A1	L1	B3	Q5	B4	R16	B4	R7	C4	U4	A3	W12	A2		



	J1	J2	R14	R20
US		X		Replace by wire
EU	X			Replace by wire

AC voltages across transformer winding:

Pin No.	T1	Pin No.	T2
5 - 7	8,9V	4 - 6	
8 - 10	27V	7 - 9	
11 - 13	54V		

Pin No.	U3 PQ3RD13	U8 PQ12CG3032F
1	5,71V	9,4V
2	3,31V	6,1V
3	0V	0V
4	9,18V	12,6V
5		9,10V

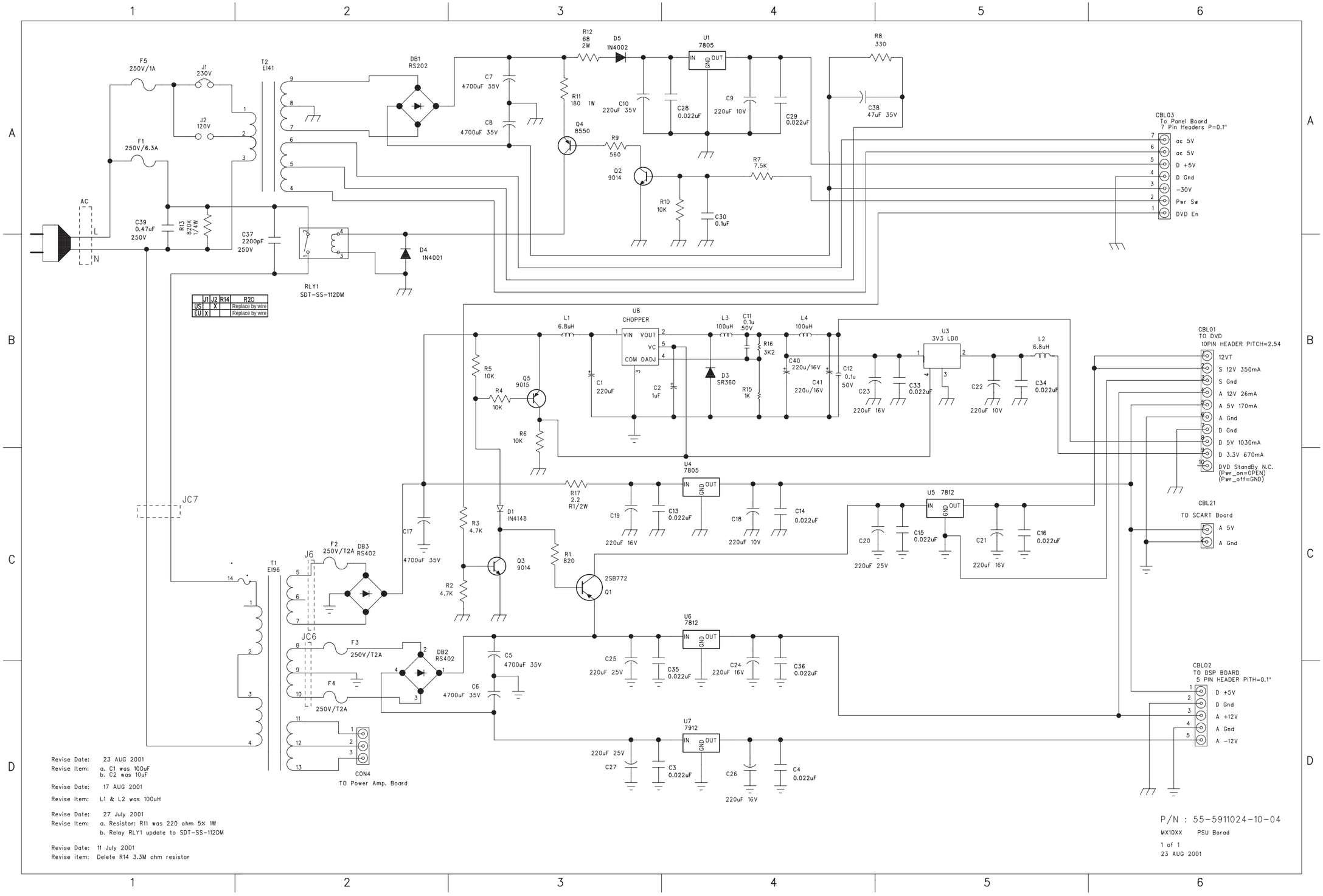
Pin No.	Q1	Q2	Q3	Q4	Q5
B	16,2V	0,7V	0,7V	7,9V	8,66V
C	16,8V	64mV	74mV	8,7V	8,8V
E	16,8V	2mV	0V	8.7V	9,22V

Pin No.	U1 NJM7805FA	U4 NJM7805FA	U5 NJM7812	U6 NJM7812	U7 NJM7912
IN	6,9V	9,02V	18V	17,7V	-19V
GND	0V	0V	0V	0V	0V
OUT	5V	5V	12,23V	12V	-12,3V

Measurement in DVD playing Mode (5,1 Channel Disc)

5-3

CIRCUIT DIAGRAM



AC	B1
C1	B3
C10	A3
C11	B4
C12	B4
C13	C3
C14	C4
C15	C5
C16	C5
C17	C2
C18	C4
C19	C3
C2	B4
C20	C5
C21	C5
C22	B5
C23	B5
C24	D4
C25	D3
C26	D4
C27	D3
C28	A4
C29	A4
C3	D3
C30	A4
C33	B5
C34	B5
C35	D3
C36	D4
C37	B2
C38	A4
C39	B1
C4	D4
C40	B4
C41	B4
C5	D3
C6	D3
C7	A3
C8	A3
C9	A4
CBL1	B6
CBL2	D6
CBL21	C6
CBL3	A6
CON4	D2
D1	C3
D3	B4
D4	B2
D5	A3
DB1	A2
DB2	D2
DB4	C2
F1	A1
F2	C2
F3	C2
F4	D2
F5	A1
J1	A1
J2	A1
JC6	D2
JC7	C1
L1	B3
L2	B5
L3	B4
L4	B4
Q1	C3
Q2	A3
Q3	C3
Q4	A3
Q5	B3
R1	C3
R10	A4
R11	A3
R12	A3
R13	A1
R14	B1
R15	B4
R16	B4
R17	C3
R2	C3
R20	A1
R3	C3
R4	B3
R5	B3
R6	B3
R7	A4
R8	A5
R9	A3
RLY1	B2
T1	D2
T2	A2
U1	A4
U3	B5
U4	C4
U5	C5
U6	C4
U7	D4
U8	B3

5-4

ELECTRICAL PARTS LIST -- PSU BOARD

MISCELLANEOUS

AC	9965 000 09695	⚠	SOCKET 2-PIN 10MM A2361WV2-2P
F1	4822 070 36302	⚠	FUSE T6,3A 250V
F2	4822 070 32002	⚠	FUSE T2A 250V
F3	4822 070 32002	⚠	FUSE T2A 250V
F4	4822 070 32002	⚠	FUSE T2A 250V
F5	4822 070 31002	⚠	FUSE T1A 250V
J6	9965 000 09694		SOCKET 2-PIN 3.96MM A3960WV-2P
JC6	9965 000 09697		SOCKET 3-PIN 5.08MM PITCH
JC7	9965 000 09696	⚠	SOCKET XFORMER A3961WV2-2 PIN
RLY1	9965 000 10634		RELAY 12VDC/10A SDT-SS-112DM
T1	9965 000 10633	⚠	M XFORMER 230V TT1-0123020-11
T2	9965 000 09688	⚠	STAND XFORMER EI-41 120V/230V

CAPACITORS

C1	9965 000 10629		CAP ELEC 220UF 50V 20% 105°C
C2	9965 000 10627		CAP ELEC 1UF 50V 20% 105°C
C3	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C4	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C5	9965 000 09671		CAP ELEC 4700UF 35V 20%
C6	9965 000 09671		CAP ELEC 4700UF 35V 20%
C7	9965 000 09671		CAP ELEC 4700UF 35V 20%
C8	9965 000 09671		CAP ELEC 4700UF 35V 20%
C9	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C10	9965 000 10091		CAP ELEC RX 220UF 35V 20%
C11	9965 000 09666		CAP CER 0.1UF 100V 20% Y5V
C12	9965 000 09666		CAP CER 0.1UF 100V 20% Y5V
C13	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C14	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C15	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C16	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C17	9965 000 09671		CAP ELEC 4700UF 35V 20%
C18	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C19	9965 000 10091		CAP ELEC RX 220UF 35V 20%
C20	9965 000 10091		CAP ELEC RX 220UF 35V 20%
C21	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C22	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C23	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C24	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C25	9965 000 10091		CAP ELEC RX 220UF 35V 20%
C26	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C27	9965 000 10091		CAP ELEC RX 220UF 35V 20%
C28	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C29	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C30	9965 000 09652		CAP CER 0.1UF 50V +80/-20% Y5V
C33	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C34	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C35	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C36	9965 000 09667		CAP CER 0.022UF 50V +80/-20%
C37	9965 000 10626		CAP CER KX 2200PF 250VAC 20%
C38	9965 000 09670		CAP ELEC GR 47UF 35V 20%
C39	9965 000 09672	⚠	CAP MPF 0.47UF 250VAC 20%
C40	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C
C41	9965 000 10628		CAP ELEC 220UF 16V 20% 105°C

RESISTORS

R1	9965 000 09684	RES CF 820 OHM 5% 1/6W AXIAL
R2	9965 000 09680	RES CF 4.7K OHM 5% 1/6W AXIAL
R3	9965 000 09680	RES CF 4.7K OHM 5% 1/6W AXIAL
R4	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R5	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R6	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R7	9965 000 09683	RES CF 7.5K OHM 5% 1/6W AXIAL
R8	9965 000 09677	RES CF 330 OHM 5% 1/6W AXIAL
R9	9965 000 09681	RES CF 560 OHM 5% 1/6W AXIAL
R10	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R11	9965 000 10710	RES CF 180 OHM 5% 1W AXIAL
R12	9965 000 09682	RES CF 68 OHM 5% 2W AXIAL
R13	9965 000 09685	RES CF 820K OHM 5% 1/4W AXIAL
R15	9965 000 10630	RES MF 1K OHM 1% 1/6W AXIAL
R16	9965 000 10631	RES MF 3.2K OHM 1% 1/6W AXIAL
R17	9965 000 09676	RES CF 2.2 OHM 5% 1/2W AXIAL

COILS & FILTERS

L1	9965 000 10632	IND CHOKE 6.8UH 10% RADIAL
L2	9965 000 10632	IND CHOKE 6.8UH 10% RADIAL
L3	9965 000 09687	LINE CHOKE 100UH 1A 250VAC
L4	9965 000 09687	LINE CHOKE 100UH 1A 250VAC

DIODES

D1	4822 130 30621	1N4148
D3	9965 000 09663	DIODE SR360 3A/60V
D4	5322 130 30684	1N4002RL
D5	5322 130 30684	1N4002RL
DB1	9965 000 09662	BRIDGE RECT. RS202 2A 100V
DB2	4822 130 70035	RS402L
DB4	4822 130 70035	RS402L

TRANSISTORS & INTEGRATED CIRCUITS

Q1	4822 130 42426	2SB772Q
Q2	4822 130 60644	9014C
Q3	4822 130 60644	9014C
Q4	9965 000 09664	TR T8550 PNP HFE 170 1.5A
Q5	4822 130 63082	9015C
U1	4822 209 83824	NJM7805FA
U3	9965 000 06980	PQ3RD13
U4	4822 209 83824	NJM7805FA
U5	9965 000 09690	I.C. NJM7812 VOLT REG 12V 1A
U6	9965 000 09690	I.C. NJM7812 VOLT REG 12V 1A
U7	9965 000 09691	I.C. NJM7912 VOLT REG -12V 1A
U8	9965 000 09692	I.C. PQ1CG3032FZ CHOPPER REGULATOR

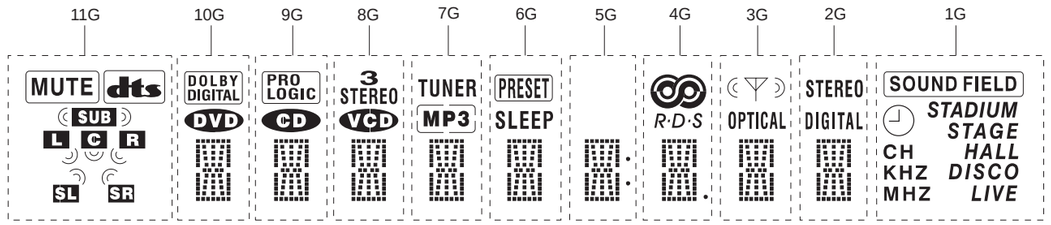
NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

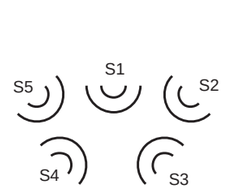
FRONT BOARD

TABLE OF CONTENTS

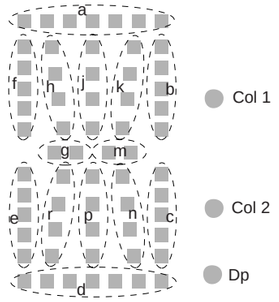
FTD Display pins connection 6-1
Components Layout + Voltages 6-2
UPD780024GC Internal Block 6-3
M74HC138 & UPD16315 Internal Block 6-4
Circuit diagram 6-5
Electrical parts list 6-6

FTD DISPLAY PIN ASSIGNMENT & CONNECTION





(11G)



(2G - 10G)

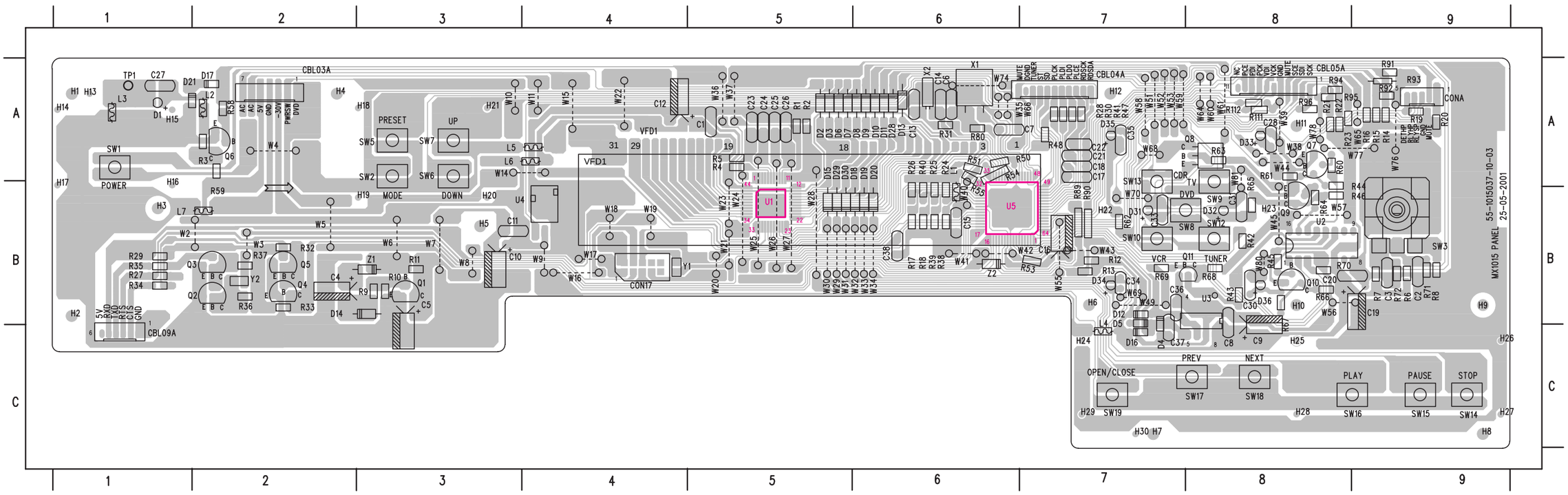
	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	MUTE	DOLBY DIGITAL	PRO LOGIC	3 STEREO	TUNER	PRESET	Col 1	R·D·S		STEREO	SOUND FIELD
P2	dts	DVD	CD	VCD	MP3	SLEEP	Col 2	Dp	OPTICAL	DIGITAL	
P3	SUB	a	a	a	a	a	a	a	a	a	*STADIUM*
P4		b	b	b	b	b	b	b	b	b	*STAGE*
P5	R	f	f	f	f	f	f	f	f	f	CH
P6	C	h	h	h	h	h	h	h	h	h	*HALL*
P7	L	j	j	j	j	j	j	j	j	j	KHZ
P8	SR	k	k	k	k	k	k	k	k	k	*DISCO*
P9	SL	g	g	g	g	g	g	g	g	g	MHZ
P10	S1	m	m	m	m	m	m	m	m	m	*LIVE*
P11	S2	c	c	c	c	c	c	c	c	c	-
P12	S3	e	e	e	e	e	e	e	e	e	-
P13	S4	n	n	n	n	n	n	n	n	n	-
P14	S5	p	p	p	p	p	p	p	p	p	-
P15	-	r	r	r	r	r	r	r	r	r	-
P16	-	d	d	d	d	d	d	d	d	d	-

FTD PIN NO.	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
FUNCTION	F2	F2	-	-	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	-	-	F1	F1
CIRCUIT PIN NO.	31	30	-	-	29	28	27	26	25	24	23	22	21	20	19	-	-	-	-	-	-	-	-	-	-	-	-	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	-	-	2	1

6-2

LAYOUT DIAGRAM

C1	A5	C21	A7	C35	A7	CBL04	A7	D17	A2	D34	B7	L5	A3	Q9	B8	R19	A9	R30	A7	R42	B8	R58	A2	R7	B9	R95	A8	SW3	B9	VFD1	A4	W23	B5	W35	A6	W5	B2	W65	A8	W9	B4
C10	B3	C22	A7	C36	B7	CBL05	A8	D18	B5	D35	A7	L6	A3	R1	B5	R2	B5	R31	A6	R43	B8	R59	A2	R70	B8	R96	A8	SW4	A2	W10	A3	W24	B5	W36	A5	W51	A7	W66	A6	X1	A6
C11	B3	C23	A5	C37	B7	CBL09	C1	D19	B6	D36	B8	I7	B2	R10	B3	R20	A9	R32	B2	R44	B8	R6	B9	R71	B9	SW1	A1	SW5	A3	W11	A4	W25	B5	W37	A6	W52	A7	W68	A6	X2	A6
C12	A4	C24	A5	C38	B6	CON17	B4	D2	A5	D4	B7	Q1	B3	R11	B3	R21	A8	R33	B2	R45	B8	R60	A8	R72	B9	SW10	B7	SW6	A3	W14	A3	W26	B5	W38	A8	W53	A7	W69	B7	Y1	B4
C13	A6	C25	A5	C4	B2	CONA	A9	D20	B6	D5	B7	Q10	B8	R111	A8	R22	A8	R34	B1	R46	B8	R61	A8	R8	B9	SW12	B8	SW7	A3	W15	A4	W27	B5	W39	A8	W55	B7	W7	B3	Y2	B2
C14	A6	C26	A5	C5	B3	D1	A1	D21	A1	D6	A5	Q11	B7	R112	A8	R23	A8	R35	B1	R47	A7	R62	B7	R80	A6	SW13	A7	SW8	B7	W16	B4	W28	B5	W4	A2	W56	B8	W70	B7	Z1	B2
C15	C15	C27	A1	C6	A6	D10	A6	D28	A6	D7	A5	Q2	B2	R12	B7	R24	B6	R36	B2	R48	A7	R63	A8	R89	B7	SW14	C9	SW9	B8	W17	B4	W29	B5	W40	B6	W57	B8	W74	A6	Z2	B6
C16	B7	C28	A8	C7	A6	D11	A6	D29	B5	D8	A5	Q3	B2	R13	B7	R25	B6	R37	B2	R5	B5	R64	B8	R9	B3	SW15	C9	TP1	A1	W18	B4	W3	B2	W41	B6	W58	A7	W76	A9		
C17	A7	C3	B9	C8	C8	D12	B7	D3	A5	D9	A6	Q4	B2	R14	A9	R26	B6	R38	B6	R50	A6	R65	B8	R90	B7	SW16	C8	U1	B5	W19	B4	W30	B5	W42	B6	W59	A7	W77	A8		
C18	A7	C30	B8	C89	B7	D13	A6	D30	B5	L1	B6	Q5	B2	R15	A9	R27	B1	R39	B6	R51	A6	R66	B8	R91	A9	SW17	C7	U2	B8	W2	B1	W31	B5	W43	B7	W6	B3	W78	A8		
C19	B8	C31	B8	C9	C8	D14	B2	D31	B7	L2	A2	Q6	A2	R16	A9	R28	A7	R4	B5	R53	B6	R67	B8	R92	A9	SW18	C8	U3	B8	W20	B5	W32	B5	W44	A8	W60	A8	W8	B3		
C2	B9	C33	B7	C90	B7	D15	B5	D32	B8	L3	A1	Q7	A8	R17	B6	R29	B1	R40	B6	R54	A6	R68	B8	R93	A9	SW19	C7	U4	B4	W21	B5	W33	B6	W45	B8	W61	A8	W80	B8		
C20	B8	C34	B7	CBL03	A2	D16	C7	D33	A8	L4	B7	Q8	A7	R18	B6	R3	A2	R41	A7	R55	A6	R69	B7	R94	A8	SW2	A3	U5	B6	W22	A4	W34	B6	W49	B7	W64	A8	W81	B8		

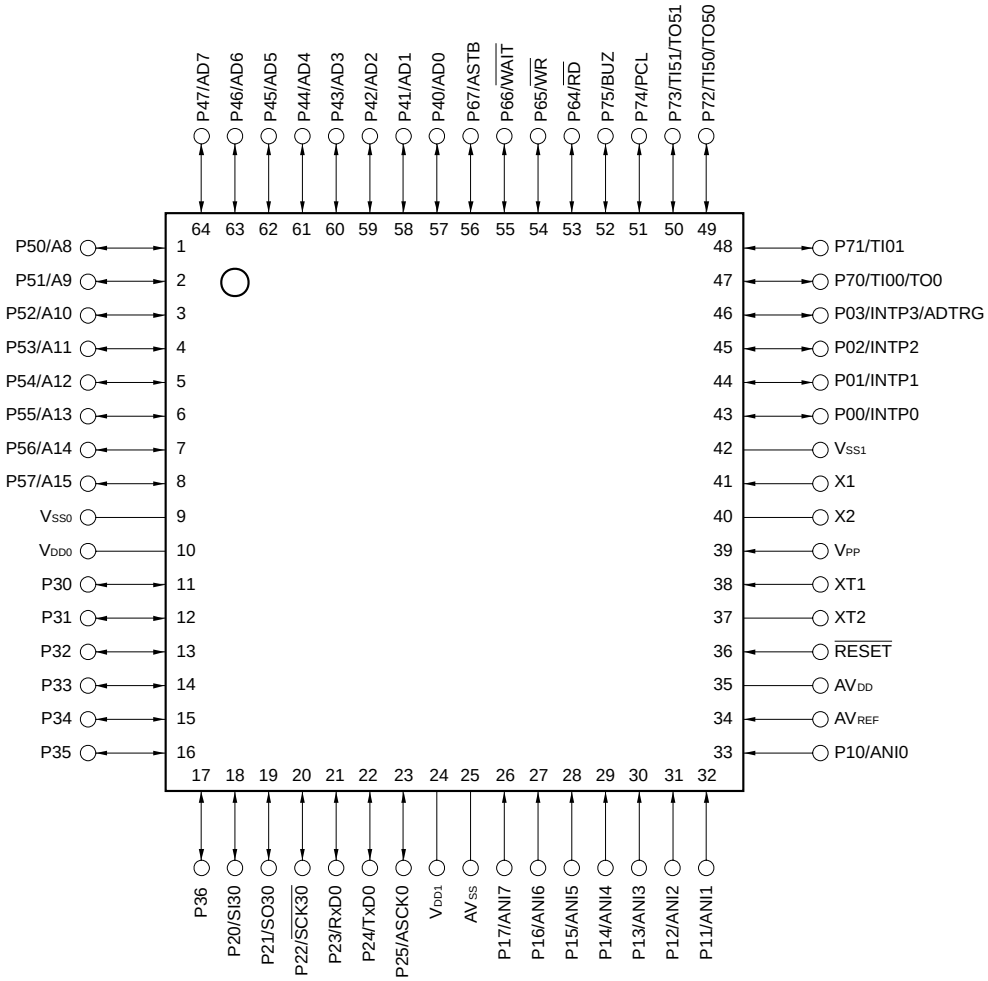


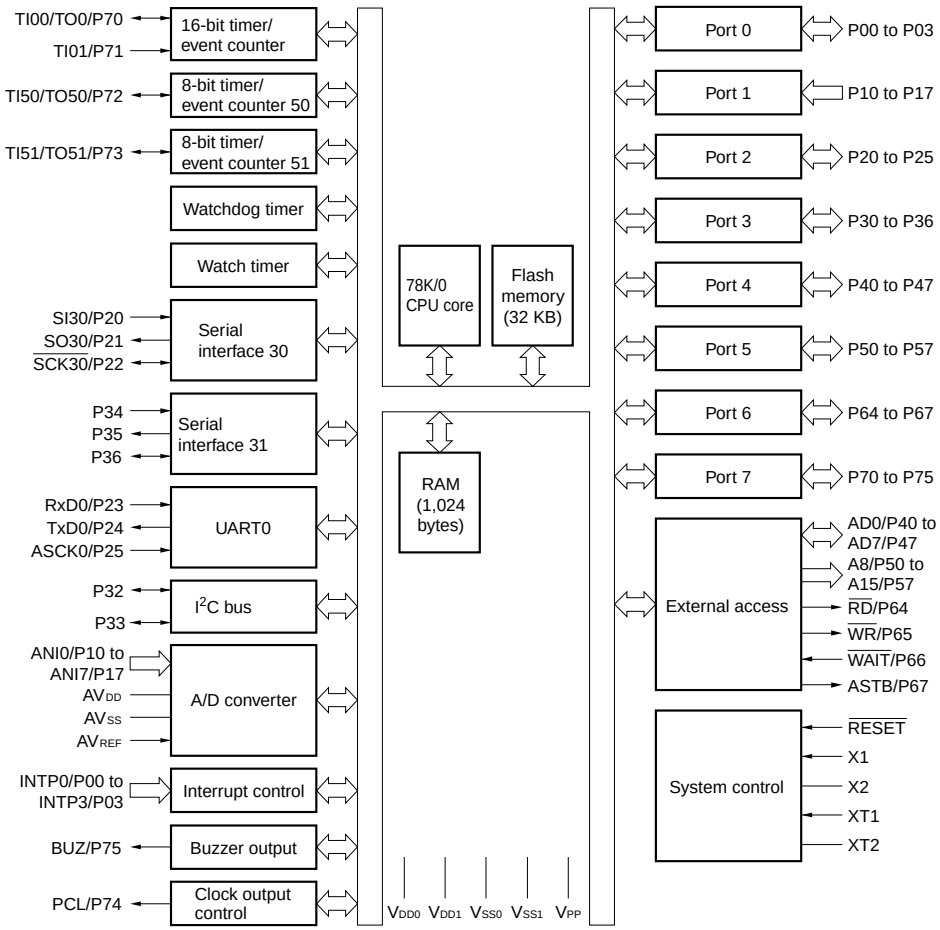
U1 (UPD16315)						U2 (74HC138B)		U3 (XL24C04)		U5 (D78F0034)							
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	4,95V	17	-16mV	33	-20,0V	1	21,6mV	1	0V	1	27,8mV	17	4,94V	33	4,96V	49	32mV
2	0V	18	-12,5V	34	-20,0V	2	21,4mV	2	0V	2	4,91V	18	4,94V	34	4,94V	50	0,22mV
3	12mV	19	-20,0V	35	-20,0V	3	45mV	3	0V	3	2,12V	19	4,96V	35	4,94V	51	0,94mV
4	12mV	20	-20,0V	36	-20,0V	4	23mV	4	0V	4	18,2mV	20	4,96V	36	5,00V	52	27mV
5	1,88V	21	-16,3V	37	-20,0V	5	23mV	5	45mV	5	4,94V	21	5,00V	37	3,05V	53	27mV
6	4,82V	22	-18,1V	38	-20,0V	6	4,82V	6	45mV	6	4,89V	22	4,94V	38	2,26V	54	2,20V
7	3,10V	23	-20,0V	39	-20,0V	7	0V	7	0V	7	17,5mV	23	2,16V	39	12,5mV	55	27mV
8	4,25V	24	-12,8V	40	-20,0V	8	0V	8	4,82V	8	17,3mV	24	4,94V	40	3,00V	56	0,18V
9	3,00V	25	-12,8V	41	-20,1V	9	4,82V			9	16,4mV	25	16,2mV	41	2,48V	57	45mV
10	12mV	26	-20,3V	42	-20,3V	10	27mV			10	4,94V	26	16,7mV	42	19,6mV	58	45mV
11	12mV	27	-20,3V	43	4,96V	11	4,80V			11	41mV	27	16,8mV	43	4,58V	59	45mV
12	0V	28	-14,8V	44	0V	12	4,80V			12	17mV	28	4,96V	44	4,58V	60	26mV
13	5,00V	29	-14,8V			13	4,80V			13	4,82V	29	16,7mV	45	27mV	61	26mV
14	-16,2V	30	-22,3V			14	4,80V			14	4,82V	30	2,16V	46	172mV	62	26mV
15	0V	31	-22,2V			15	22,6mV			15	14,8mV	31	2,16V	47	4,97V	63	44mV
16	-12,6V	32	-20,2V			16	4,82V			16	14,9mV	32	4,96V	48	27mV	64	43,4mV

Pin No.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
B	0,69V	0,69V	0,14V	0,69V	0,14V	0,72V	0,76V	0,77V	22mV	0,75V	0,75V
C	18mV	17mV	0,69V	11mV	0,69V	59mV	123mV	126mV	2,28V	0,12V	0,12V
E	11mV	11mV	10,8mV	18mV	11mV	9,6mV	27mV	28mV	27mV	23mV	22mV

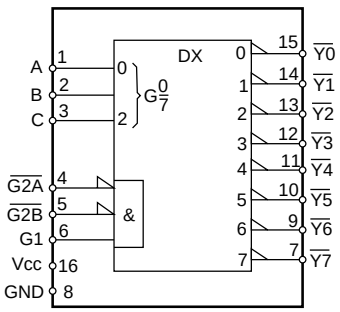
Measurement in DVD playing Mode (5,1 Channel Disc)

UPD780024GC INTERNAL BLOCK





M74HC138 INTERNAL BLOCK & TRUTH TABLE

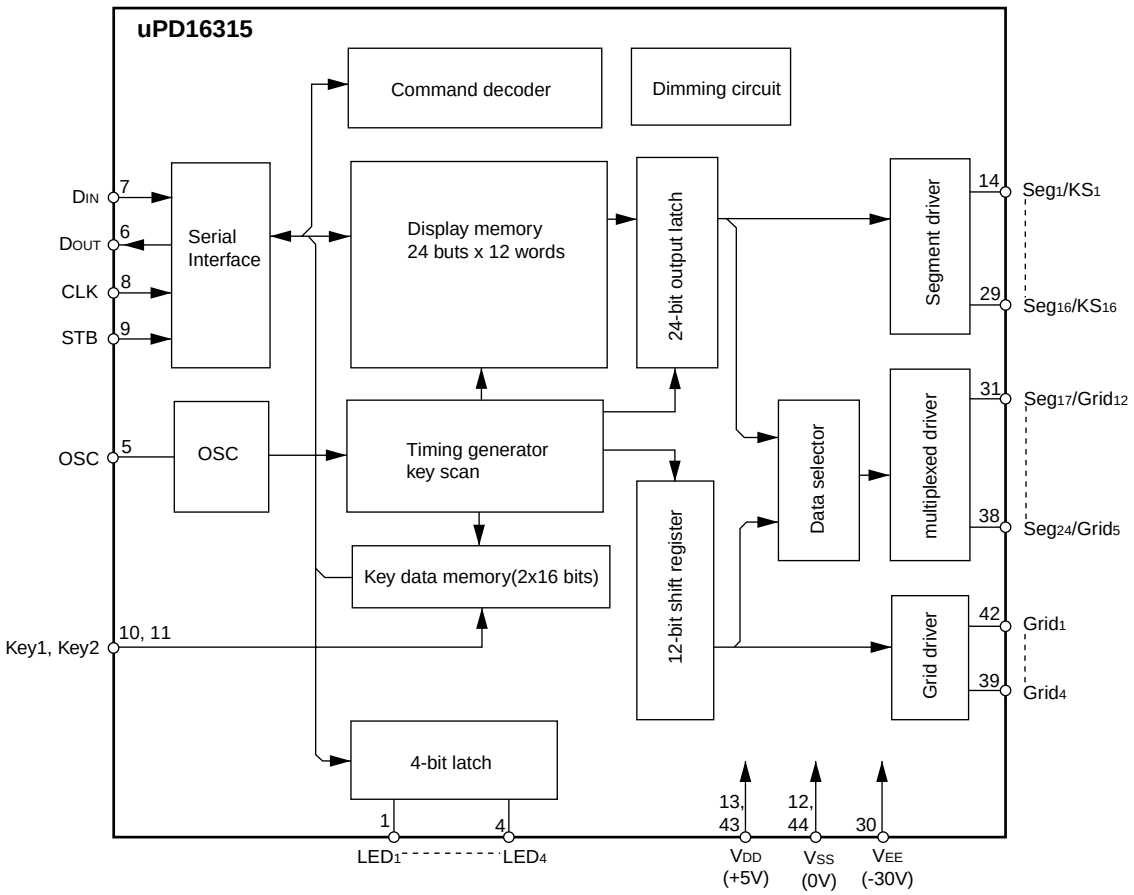


TRUTH TABLE

INPUTS						OUTPUTS							
ENABLE			SELECT										
$\overline{G2B}$	$\overline{G2B}$	G1	C	B	A	$\overline{Y0}$	$\overline{Y1}$	$\overline{Y2}$	$\overline{Y3}$	$\overline{Y4}$	$\overline{Y5}$	$\overline{Y6}$	$\overline{Y7}$
X	X	L	X	X	X	H	H	H	H	H	H	H	H
X	H	X	X	X	X	H	H	H	H	H	H	H	H
H	X	X	X	X	X	H	H	H	H	H	H	H	H
L	L	H	L	L	L	L	H	H	H	H	H	H	H
L	L	H	L	L	H	H	L	H	H	H	H	H	H
L	L	H	L	H	L	H	H	L	H	H	H	H	H
L	L	H	L	H	H	H	H	H	L	H	H	H	H
L	L	H	H	L	L	H	H	H	H	L	H	H	H
L	L	H	H	L	H	H	H	H	H	H	L	H	H
L	L	H	H	H	L	H	H	H	H	H	H	L	H
L	L	H	H	H	H	H	H	H	H	H	H	H	L

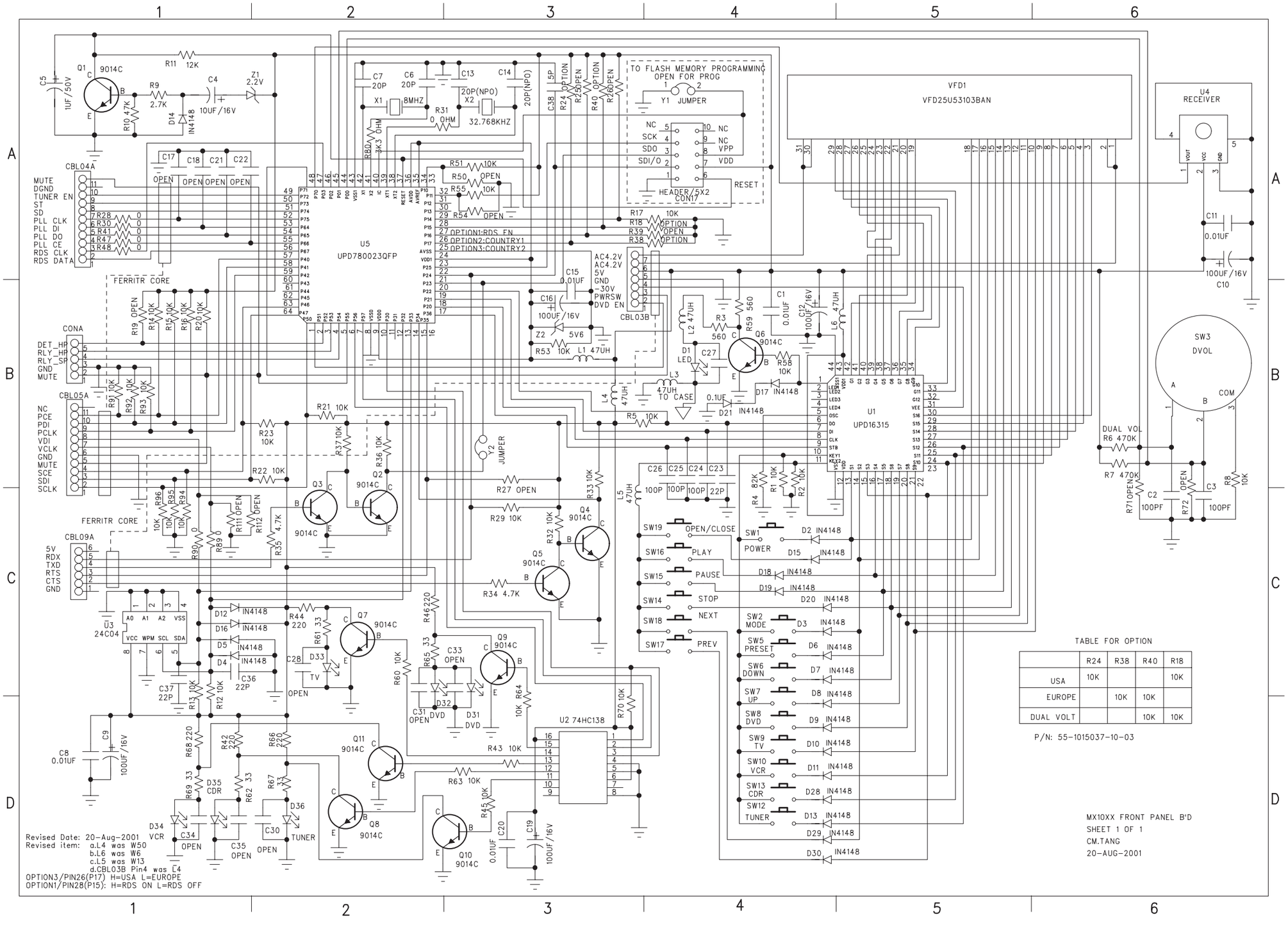
X = Don't care

UPD16315 INTERNAL BLOCK



6-5

CIRCUIT DIAGRAM



C1	B4	R2	B4
C10	A6	R20	B1
C11	A6	R21	B2
C12	B4	R22	B2
C13	A3	R23	B2
C14	A3	R24	A3
C15	B3	R25	A3
C16	B3	R26	A3
C17	A1	R27	B3
C18	A1	R28	A1
C19	D3	R29	C3
C2	C6	R3	B4
C20	D3	R30	A1
C21	A1	R31	A3
C22	A1	R32	C3
C23	B4	R33	B3
C24	B4	R34	C3
C25	B4	R35	C2
C26	B4	R36	B2
C27	B4	R37	B2
C28	C2	R38	A4
C3	C6	R39	A4
C30	D2	R4	B4
C31	C2	R40	A3
C33	C3	R41	A1
C34	D1	R42	D1
C35	D1	R43	D3
C36	C1	R44	C2
C37	C1	R45	D3
C38	A3	R46	C2
C4	A1	R47	A1
C5	A1	R48	A1
C6	A2	R5	B3
C7	A2	R50	A3
C8	D1	R51	A3
C9	D1	R53	B3
CBL03	B3	R54	A3
CBL04	A1	R55	A3
CBL05	B1	R58	B4
CBL09	C1	R59	B4
CON17	A4	R6	B6
CONA	B1	R60	C2
D1	B4	R61	C2
D10	D4	R62	D1
D11	D4	R63	D3
D12	C1	R64	D3
D13	D4	R65	C2
D14	A1	R66	D2
D15	C4	R67	D2
D16	C1	R68	A1
D17	B4	R69	A1
D18	C4	R7	B6
D19	C4	R70	D3
D2	C4	R71	B6
D20	C4	R72	B6
D21	B4	R8	B6
D28	D4	R80	A2
D29	D4	R89	C1
D3	C4	R9	A1
D30	D4	R90	C1
D31	C3	R91	B1
D32	C2	R92	B1
D33	C2	R93	B1
D34	D1	R94	C1
D35	D1	R95	C1
D36	D2	R96	C1
D4	C1	SW1	C4
D5	C1	SW10	D4
D6	C4	SW12	D4
D7	C4	SW13	D4
D8	D4	SW14	C4
D9	D4	SW15	C4
L1	B3	SW16	C4
L2	B4	SW17	C4
L3	B4	SW18	C4
L4	B3	SW19	C4
L5	C3	SW2	C4
L6	B4	SW3	B6
Q1	A1	SW5	C4
Q10	D3	SW6	C4
Q11	D2	SW7	C4
Q2	C2	SW8	D4
Q3	C2	SW9	D4
Q4	C3	U1	B5
Q5	C3	U2	D3
Q6	B4	U3	C1
Q7	C2	U4	A6
Q8	D2	U5	A2
Q9	C3	VFD1	A5
R1	B4	X1	A2
R10	A1	X2	A2
R11	A1	Y1	A4
R111	C1	Y2	B3
R112	C1	Z1	A1
R12	C1	Z2	B3
R13	C1		
R14	B1		
R15	B1		
R16	B1		
R17	A4		
R18	A4		
R19	B1		

6-6

ELECTRICAL PARTS LIST - FRONT BOARD

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

SW1	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW2	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW3	9965 000 10638	ROT ENCODER L=20MM EI602241-2
SW5	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW6	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW7	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW8	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW9	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW10	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW12	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW13	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW14	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW15	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW16	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW17	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW18	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
SW19	9965 000 10149	SW TACT 1P1T 20MA 15V H=5MM
VFD1	9965 000 10151	VFD DISPLAY 25U53103BAN REV.B
X1	9965 000 10147	CRYSTAL 8MHZ 20PPM HC-49U
X2	9965 000 10146	CRYSTAL 32.768KHZ 20PPM DT-38

CAPACITORS

C1	9965 000 10123	CAP CER 0.01UF 50V 20%
C2	9965 000 10122	CAP CER 100PF 50V 10%
C3	9965 000 10122	CAP CER 100PF 50V 10%
C4	9965 000 09654	CAP ELEC GR 10UF 16V 20%
C5	9965 000 09668	CAP ELEC GR 1UF 50V 20%
C6	9965 000 10124	CAP CER 20PF 50V 10% NPO
C7	9965 000 10124	CAP CER 20PF 50V 10% NPO
C8	9965 000 10123	CAP CER 0.01UF 50V 20%
C9	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C10	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C11	9965 000 10123	CAP CER 0.01UF 50V 20%
C12	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C13	9965 000 10124	CAP CER 20PF 50V 10% NPO
C14	9965 000 10124	CAP CER 20PF 50V 10% NPO
C15	9965 000 10123	CAP CER 0.01UF 50V 20%
C16	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C19	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C20	9965 000 10123	CAP CER 0.01UF 50V 20%
C23	9965 000 10125	CAP CER 22PF 50V 5% SL
C24	9965 000 10122	CAP CER 100PF 50V 10%
C25	9965 000 10122	CAP CER 100PF 50V 10%
C26	9965 000 10122	CAP CER 100PF 50V 10%
C27	9965 000 09652	CAP CER 0.1UF 50V +80/-20% Y5V
C36	9965 000 10125	CAP CER 22PF 50V 5% SL
C37	9965 000 10125	CAP CER 22PF 50V 5% SL
C38	9965 000 10118	CAP CER 5PF 50V 0.25P SL

RESISTORS

R1	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R2	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R3	9965 000 09681	RES CF 560 OHM 5% 1/6W AXIAL
R4	9965 000 10134	RES CF 82K OHM 5% 1/6W AXIAL
R5	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R6	9965 000 10133	RES CF 470K OHM 5% 1/6W AXIAL
R7	9965 000 10133	RES CF 470K OHM 5% 1/6W AXIAL
R8	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R9	9965 000 10129	RES CF 2.7K OHM 5% 1/6W AXIAL
R10	9965 000 10132	RES CF 47K OHM 5% 1/6W AXIAL
R11	9965 000 10127	RES CF 12K OHM 5% 1/6W AXIAL
R12	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R13	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R14	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R15	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R16	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R17	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R20	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R21	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R22	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R23	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R29	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R32	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R33	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R34	9965 000 09680	RES CF 4.7K OHM 5% 1/6W AXIAL
R35	9965 000 09680	RES CF 4.7K OHM 5% 1/6W AXIAL
R36	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R37	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R38	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R40	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R42	9965 000 10128	RES CF 220 OHM 5% 1/6W AXIAL
R43	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R44	9965 000 10128	RES CF 220 OHM 5% 1/6W AXIAL
R45	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R46	9965 000 10128	RES CF 220 OHM 5% 1/6W AXIAL
R51	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R53	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R55	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R58	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R59	9965 000 09681	RES CF 560 OHM 5% 1/6W AXIAL
R60	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R61	9965 000 10130	RES CF 33 OHM 5% 1/6W AXIAL
R62	9965 000 10130	RES CF 33 OHM 5% 1/6W AXIAL
R63	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R64	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R65	9965 000 10130	RES CF 33 OHM 5% 1/6W AXIAL
R66	9965 000 10128	RES CF 220 OHM 5% 1/6W AXIAL
R67	9965 000 10130	RES CF 33 OHM 5% 1/6W AXIAL
R68	9965 000 10128	RES CF 220 OHM 5% 1/6W AXIAL
R69	9965 000 10130	RES CF 33 OHM 5% 1/6W AXIAL
R70	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R80	9965 000 10131	RES CF 3.3K OHM 5% 1/6W AXIAL
R91	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R92	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R93	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R94	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R95	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R96	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL

COILS & FILTERS

L1	9965 000 10136	IND PEAK 47UH 10% AXIAL
L2	9965 000 10136	IND PEAK 47UH 10% AXIAL
L3	9965 000 10136	IND PEAK 47UH 10% AXIAL
L4	9965 000 10136	IND PEAK 47UH 10% AXIAL
L5	9965 000 10136	IND PEAK 47UH 10% AXIAL
L6	9965 000 10136	IND PEAK 47UH 10% AXIAL

DIODES

D1	9965 000 10138	LED RED RECTANGLE 2R4PD-2
D2	4822 130 30621	1N4148
D3	4822 130 30621	1N4148
D4	4822 130 30621	1N4148
D5	4822 130 30621	1N4148
D6	4822 130 30621	1N4148
D7	4822 130 30621	1N4148
D8	4822 130 30621	1N4148
D9	4822 130 30621	1N4148
D10	4822 130 30621	1N4148
D11	4822 130 30621	1N4148
D12	4822 130 30621	1N4148
D13	4822 130 30621	1N4148
D14	4822 130 30621	1N4148
D15	4822 130 30621	1N4148
D16	4822 130 30621	1N4148
D17	4822 130 30621	1N4148
D18	4822 130 30621	1N4148
D19	4822 130 30621	1N4148
D20	4822 130 30621	1N4148
D21	4822 130 30621	1N4148
D28	4822 130 30621	1N4148
D29	4822 130 30621	1N4148
D30	4822 130 30621	1N4148
D31	9965 000 10140	LED AMBER 5X8.6MM 5O3STAY08
D32	9965 000 10140	LED AMBER 5X8.6MM 5O3STAY08
D33	9965 000 10140	LED AMBER 5X8.6MM 5O3STAY08
D34	9965 000 10140	LED AMBER 5X8.6MM 5O3STAY08
D35	9965 000 10140	LED AMBER 5X8.6MM 5O3STAY08
D36	9965 000 10140	LED AMBER 5X8.6MM 5O3STAY08
Z1	9965 000 10116	ZENER MTZ-J2.2V 1/2W 5%
Z2	4822 130 34173	BZX79-B5V6

TRANSISTORS & INTEGRATED CIRCUITS

Q1	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q2	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q3	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q4	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q5	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q6	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q7	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q8	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q9	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q10	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
Q11	9965 000 10117	TR SS9014 NPN HFE 200 270MHZ
U1	9965 000 10145	I.C. UPD16315 VFD DRIVER
U2	9965 000 10142	I.C. LOGIC PDIL M74HC138BIR
U3	9965 000 10144	IC XL24C04 EEPROM 512B 250NS
U4	9965 000 10141	IR GP1U271R RX 940NM 38KHZ
U5	9965 000 10143	UPD780024GC-513-AB8 8BIT 32K

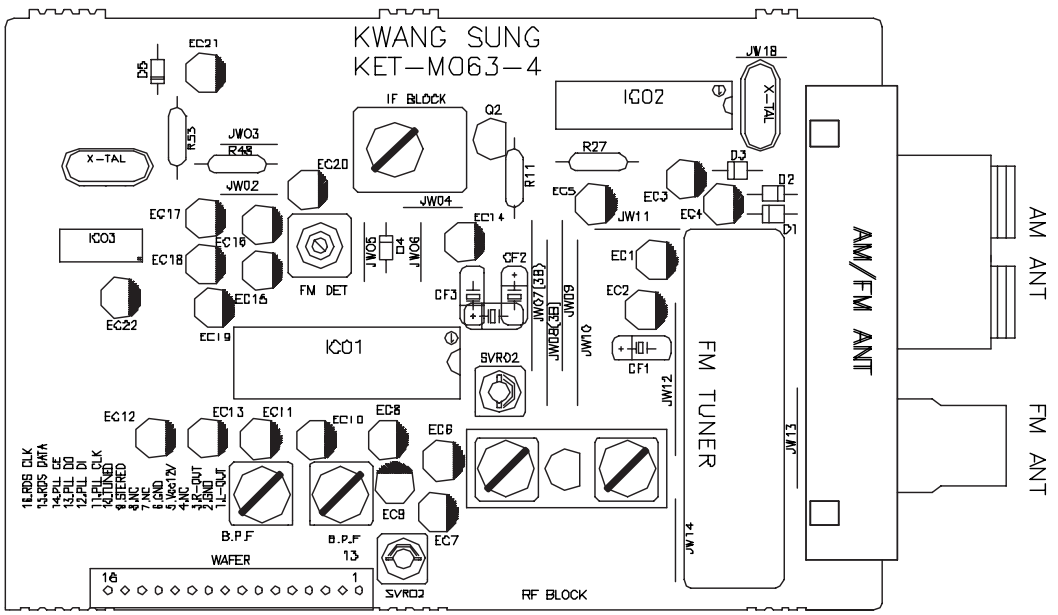
NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

TUNER BOARD

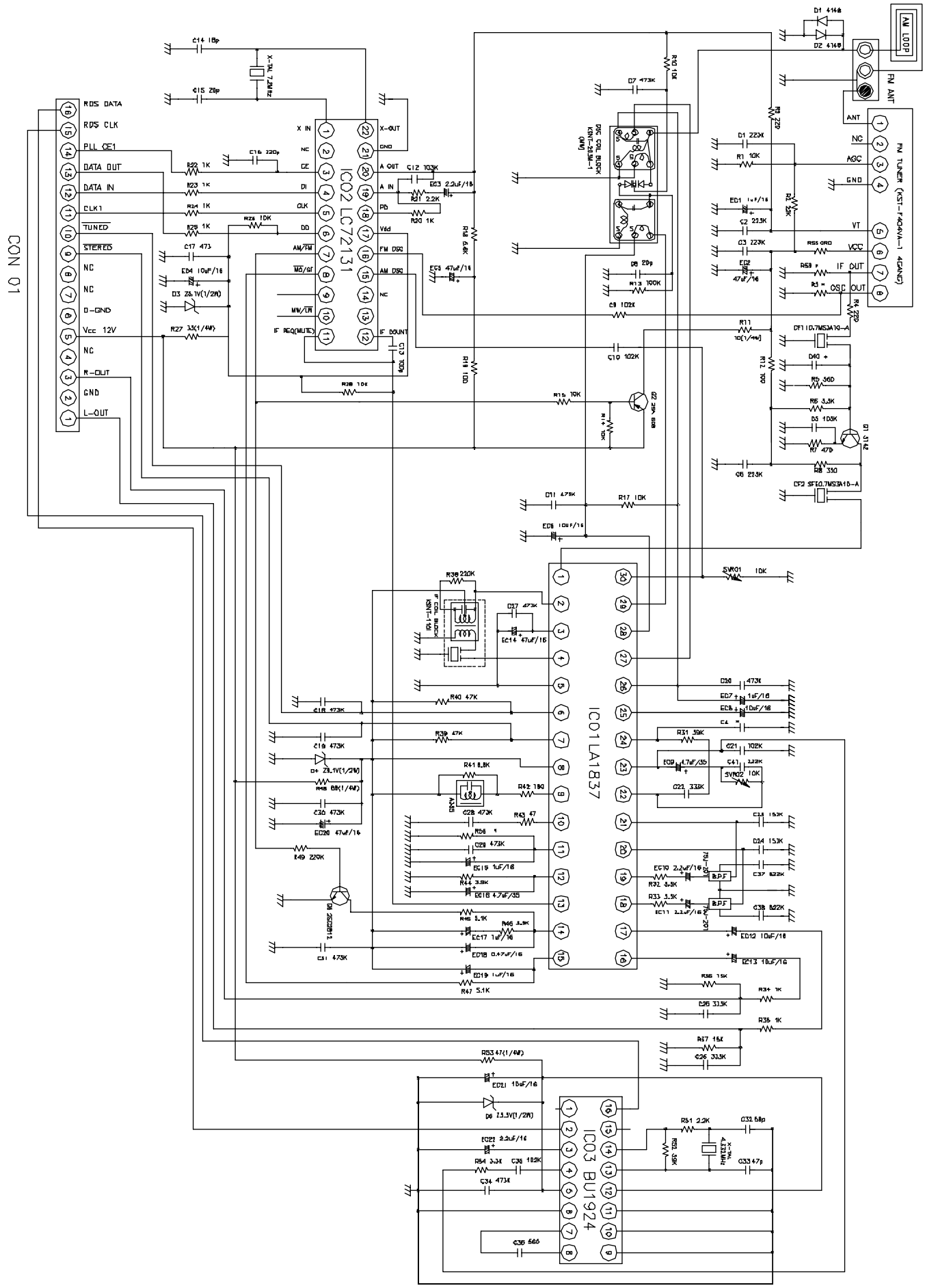
(For Information Only)

It is not recommended for component repair on this board but to replace the board when it becomes defective.
Therefore no service parts list are published in this Chapter.

The service parts available for replacement are:
Tuner Board 9965 000 10639



TUNER CIRCUIT



AV OUTPUT BOARD

(SCART version)

TABLE OF CONTENTS

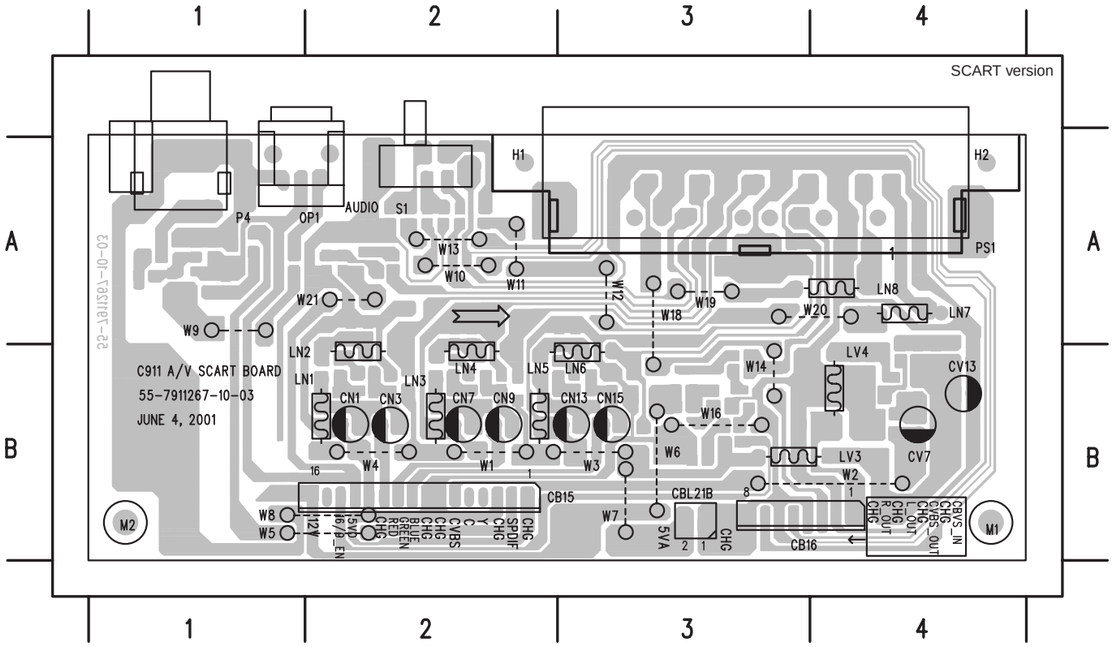
Components & Chips Layout 8B-2
Circuit Diagram 8B-3
Electrical parts list 8B-4

8B-1

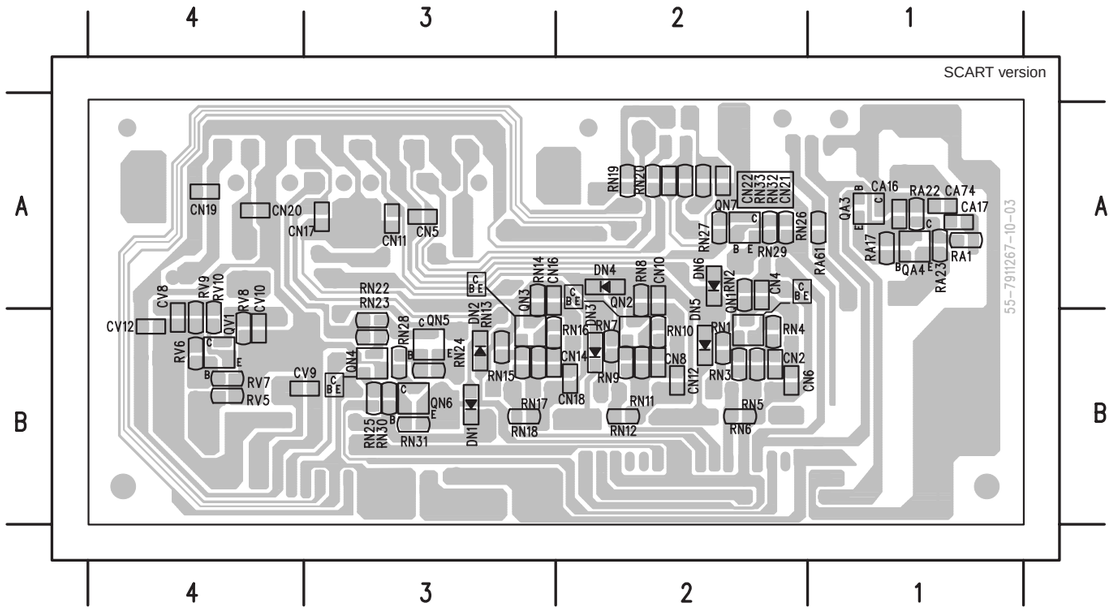
Technical Notes:

COMPONENTS LAYOUT

CA1	SKY MOUNT	CN13	B3	CN3	B2	CV8	B4	LN4	B2	QA4	A1	RA22	A1	RN17	B3	RN28	B3	RN8	A2	W11	A2	W4	B2
CA16	A1	CN14	B3	CN4	A2	CV9	B4	LN5	B2	QN1	B2	RA23	A1	RN18	B3	RN29	A2	RN9	B2	W12	A3	W5	B2
CA17	A1	CN15	B3	CN5	A3	DN1	B3	LN6	B3	QN2	B2	RA61	A1	RN19	A2	RN3	B2	RV10	B4	W13	A2	W6	B3
CA74	A1	CN16	A3	CN6	B2	DN2	B3	LN7	A4	QN3	B3	RN1	B2	RN2	A2	RN30	B3	RV5	B4	W14	B3	W7	B3
CB15	B2	CN17	A3	CN7	B2	DN3	B2	LN8	A4	QN4	B3	RN10	B2	RN20	A2	RN31	B3	RV6	B4	W16	B3	W8	B2
CB16	B3	CN18	B2	CN8	B2	DN4	A2	LV3	B3	QN5	B3	RN11	B2	RN22	B3	RN32	A2	RV7	B4	W18	A3	W9	A1
CBL21B	B3	CN19	A4	CN9	B2	DN5	B2	LV4	B4	QN6	B3	RN12	B2	RN23	B3	RN33	A2	RV8	B4	W19	A3		
CN1	B2	CN2	B2	CV10	B4	DN6	A2	OP1	A1	QN7	A2	RN13	B3	RN24	B3	RN4	B2	RV9	B4	W2	B3		
CN10	A2	CN20	A4	CV12	B4	LN1	B2	P4	A1	QV1	B4	RN14	A3	RN25	B3	RN5	B2	S1	A2	W20	A4		
CN11	A3	CN21	A2	CV13	B4	LN2	B2	PS1	A3	RA1	A1	RN15	B3	RN26	A2	RN6	B2	W1	B2	W21	A2		
CN12	B2	CN22	A2	CV7	B4	LN3	B2	QA3	A1	RA17	A1	RN16	B3	RN27	A2	RN7	B2	W10	A2	W3	B3		



CHIPS LAYOUT



Pin No.	QV1	QN1	QN2	QN3
B	0,68V_{p-p}	0,5V_{p-p}	0,5V_{p-p}	0,5V_{p-p}
C	1,07V_{p-p}	0,8V_{p-p}	0,8V_{p-p}	0,8V_{p-p}
E	0,62V_{p-p}	0,5V_{p-p}	0,5V_{p-p}	0,5V_{p-p}

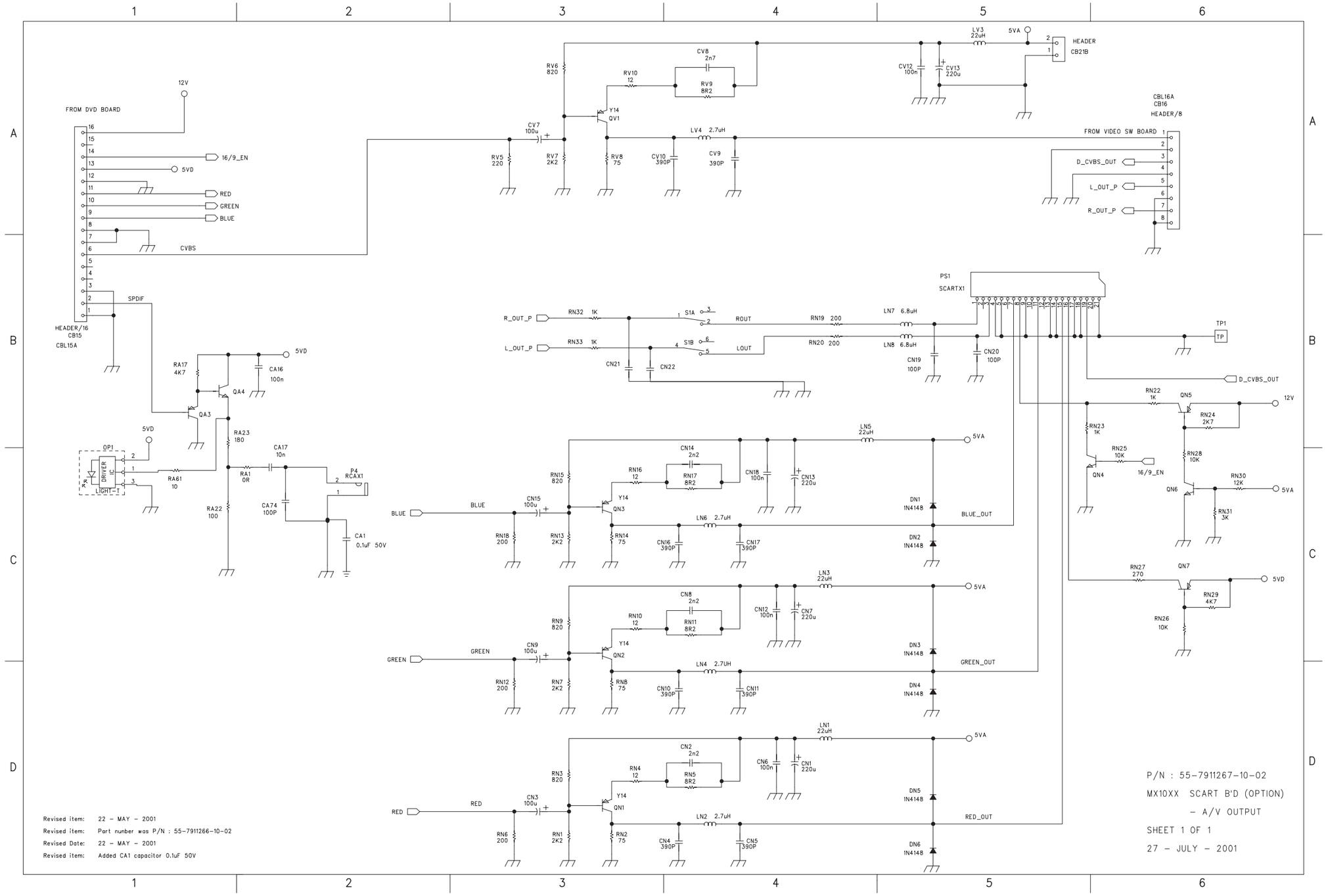
Measurement done with ABEX TVD541 (White 100%)

Pin No.	QN4	QN5	QN6	QN7	QA3	QA4
B	0V	11,3V	0,6V	4,5V	1,57V	1,75V
C	12V	12V	0V	5V	0V	4,98V
E	0V	12V	0V	5V	1,75V	1,54V

Measurement in DVD playing Mode (5,1 Channel Disc)

8B-3

CIRCUIT DIAGRAM



CA1	C2	RN28	C6
CA16	B2	RN29	C6
CA17	C2	RN3	D3
CA74	C2	RN30	C6
CB15	A1	RN31	C6
CB16	A6	RN32	B3
CBL21B	A5	RN33	B3
CN1	D4	RN4	D3
CN10	D4	RN5	D4
CN11	D4	RN6	D3
CN12	C4	RN7	D3
CN13	C4	RN8	D3
CN14	C4	RN9	C3
CN15	C3	RV10	A3
CN16	C4	RV5	A3
CN17	C4	RV6	A3
CN18	C4	RV7	A3
CN19	B5	RV8	A3
CN2	D4	RV9	A4
CN20	B5	S1	B4
CN21	B3		
CN22	B3		
CN3	D3		
CN4	D4		
CN5	D4		
CN6	D4		
CN7	C4		
CN8	C4		
CN9	C3		
CV10	A4		
CV12	A5		
CV13	A5		
CV7	A3		
CV8	A4		
CV9	A4		
DN1	C5		
DN2	C5		
DN3	C5		
DN4	D5		
DN5	D5		
DN6	D5		
LN1	D4		
LN2	D4		
LN3	C4		
LN4	D4		
LN5	B4		
LN6	C4		
LN7	B5		
LN8	B5		
LV3	A5		
LV4	A4		
OP1	C1		
P4	C2		
PS1	B5		
QA3	B1		
QA4	B1		
QN1	D3		
QN2	C3		
QN3	C3		
QN4	C5		
QN5	B6		
QN6	C6		
QN7	C6		
QV1	A3		
RA1	C2		
RA17	B1		
RA22	C1		
RA23	B1		
RA61	C1		
RN1	D3		
RN10	C3		
RN11	C4		
RN12	D3		
RN13	C3		
RN14	C3		
RN15	C3		
RN16	C3		
RN17	C4		
RN18	C3		
RN19	B4		
RN2	D3		
RN20	B4		
RN22	B6		
RN23	B5		
RN24	B6		
RN25	C6		
RN26	C6		
RN27	C6		

8B-4

ELECTRICAL PARTS LIST - AV (SCART) OUTPUT BOARD

ELECTRICAL PARTS LIST - AV (SCART) OUTPUT BOARD

MISCELLANEOUS

OP1	4822 130 10845	GP1F32T
P4	9965 000 10073	RCA SOCKET 1P BLACK
PS1	9965 000 10623	SCART CONNECTOR RT 21 PINS
S1	9965 000 10624	SW SLIDE 2P2T SKT-22F18

CAPACITORS

CA1*	9965 000 09652	CAP CER 0.1UF 50V +80/-20% Y5V
CA16	4822 126 14585	100NF 10% X7R 0805 50V
CA17	5322 122 34098	10NF10%X7R 63V
CA74	4822 126 13221	100PF 2% NP0 63V
CN1	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CN2	4822 122 33127	2,2NF10%X7R 63V
CN3	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CN4	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CN5	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CN6	4822 126 14585	100NF 10% X7R 0805 50V
CN7	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CN8	4822 122 33127	2,2NF10%X7R 63V
CN9	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CN10	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CN11	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CN12	4822 126 14585	100NF 10% X7R 0805 50V
CN13	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CN14	4822 122 33127	2,2NF10%X7R 63V
CN15	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CN16	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CN17	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CN18	4822 126 14585	100NF 10% X7R 0805 50V
CN19	4822 126 13221	100PF 2% NP0 63V
CN20	4822 126 13221	100PF 2% NP0 63V
CN21	9965 000 10625	CER SMD 47PF 50V 10% X7R 0805
CN22	9965 000 10625	CER SMD 47PF 50V 10% X7R 0805
CV7	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CV8	4822 122 32627	2.7NF10%X7R 50V
CV9	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CV10	9965 000 10115	CER SMD 390PF 50V 10% X7R 0805
CV12	4822 126 14585	100NF 10% X7R 0805 50V
CV13	9965 000 09655	CAP ELEC GR 220UF 16V 20%

RESISTORS

RA1	4822 051 20008	0R00 JUMP. (0805)
RA17	4822 051 20472	4K70 5% 0,1W
RA22	4822 117 11373	100R 1% RC12H 0805
RA23	4822 117 11448	180R 1% 0,1W
RA61	4822 051 20109	10R00 5% 0,1W
RN1	4822 117 11449	2K2 5% 0,1W 0805
RN2	4822 117 11927	75R 1% 0,1W
RN3	4822 117 11454	820R 1% 0,1W
RN4	4822 051 20129	12R00 5% 0,1W
RN5	4822 117 12322	8R2 2% 0,1W
RN6	4822 117 13528	200R 1% 0,125W 0805
RN7	4822 117 11449	2K2 5% 0,1W 0805
RN8	4822 117 11927	75R 1% 0,1W
RN9	4822 117 11454	820R 1% 0,1W
RN10	4822 051 20129	12R00 5% 0,1W
RN11	4822 117 12322	8R2 2% 0,1W
RN12	4822 117 13528	200R 1% 0,125W 0805
RN13	4822 117 11449	2K2 5% 0,1W 0805
RN14	4822 117 11927	75R 1% 0,1W
RN15	4822 117 11454	820R 1% 0,1W
RN16	4822 051 20129	12R00 5% 0,1W
RN17	4822 117 12322	8R2 2% 0,1W
RN18	4822 117 13528	200R 1% 0,125W 0805
RN19	4822 117 13528	200R 1% 0,125W 0805
RN20	4822 117 13528	200R 1% 0,125W 0805
RN22	4822 051 20102	1K00 5% 0,1W
RN23	4822 051 20102	1K00 5% 0,1W
RN24	4822 117 11449	2K2 5% 0,1W 0805
RN25	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
RN26	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
RN27	4822 117 12024	27K 1% 0.1W
RN28	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
RN29	4822 051 20472	4K70 5% 0,1W
RN30	9965 000 10156	RES SMD 12K OHM 5% 1/10W 0805
RN31	4822 051 20303	30K00 5% 0,1W
RN32	4822 051 20102	1K00 5% 0,1W
RN32	4822 117 13528	200R 1% 0,125W 0805
RN33	4822 051 20102	1K00 5% 0,1W
RN33	4822 117 13528	200R 1% 0,125W 0805
RV5	4822 117 11503	220R 1% 0.1W
RV6	4822 117 11454	820R 1% 0,1W
RV7	4822 117 11449	2K2 5% 0,1W 0805
RV8	4822 117 11927	75R 1% 0,1W
RV9	4822 117 12322	8R2 2% 0,1W
RV10	4822 051 20129	12R00 5% 0,1W

COILS & FILTERS

LN1	9965 000 10111	CHOKE 22UH 10% AXIAL EC24-220K
LN2	9965 000 10112	IND 2.7UH 10% AXIAL EC24-2R7K
LN3	9965 000 10111	CHOKE 22UH 10% AXIAL EC24-220K
LN4	9965 000 10112	IND 2.7UH 10% AXIAL EC24-2R7K
LN5	9965 000 10111	CHOKE 22UH 10% AXIAL EC24-220K
LN6	9965 000 10112	IND 2.7UH 10% AXIAL EC24-2R7K
LN7	9965 000 10622	IND CHOKE 6.8UH 10% EC24-6R8K
LN8	9965 000 10622	IND CHOKE 6.8UH 10% EC24-6R8K
LV3	9965 000 10111	CHOKE 22UH 10% AXIAL EC24-220K
LV4	9965 000 10112	IND 2.7UH 10% AXIAL EC24-2R7K

DIODES

DN1	4822 130 83338	LL4148
DN2	4822 130 83338	LL4148
DN3	4822 130 83338	LL4148
DN4	4822 130 83338	LL4148
DN5	4822 130 83338	LL4148
DN6	4822 130 83338	LL4148

TRANSISTORS & INTEGRATED CIRCUITS

QA3	4822 130 61074	2SA812M5
QA4	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
QN1	9965 000 10621	TR SMD 2SA1464 HFE300 400MHZ
QN2	9965 000 10621	TR SMD 2SA1464 HFE300 400MHZ
QN3	9965 000 10621	TR SMD 2SA1464 HFE300 400MHZ
QN4	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
QN5	4822 130 61074	2SA812M5
QN6	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
QN7	4822 130 61074	2SA812M5
QV1	9965 000 10621	TR SMD 2SA1464 HFE300 400MHZ

* SOLDERED OUTSIDE THE PC BOARD.

NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

DVD MODULE

(For Information Only)

It is not recommended for component repair on this Module but to replace the major assembly when it becomes defective.
Therefore no service parts list are published in this Chapter.

The Circuit & Layout diagrams are published for reference only. The repair assistance on DVD section is given on Chapter 2.

9-1

SERVICING THE DVD MODULE

The only service parts available for replacement are:
DVD Main Board R1.0 ..... 9965 000 10183
DVD Mechanical Loader TVM502T..... 9965 000 10185

Reprogramming of the DVD Main Board

Caution: ***This information is confidential and may not be distributed. Only a qualified service person should reprogram the DVD Main Board.***

After replacement of the DVD Main Board, the customer settings and also the region code will be lost. Reprogramming of the DVD Main Board will put the player back in the state in which it has left the factory, ie. with the default settings and the allowed region code

Reprogramming is done by way of the Remote Control as given below:

	Message displayed on TV screen
1. With the unit on and no disc in the tray press **DVD** key	
2. Press **Menu** key	Setup Menu is displayed
3. Press numerical keys <**1**> <**6**> <**7**>	"Key 1 - 6 for Region: is displayed
4. Press any one numerical keys between <1> and <6> as per Region codes given in the table below	Selected region code is displayed
5. Press **Exit** key.	

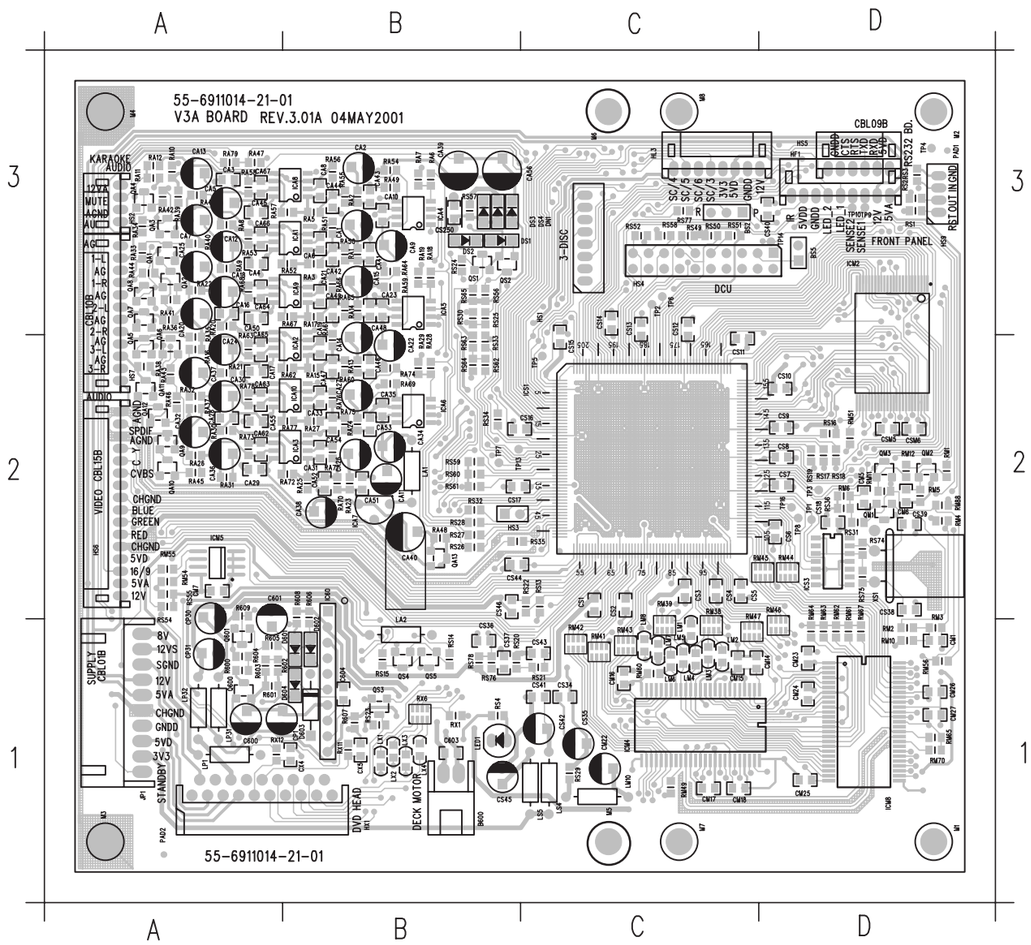
Type/version	Destination	Region Code*
MX1015D/37	USA	1
MX1050D/22	Europe	2
MX1055D/37S	USA	1
MX1060D/22S	Europe	2

* Note: The Region code may differs in some countries, in such case the Region code of the country should be used.

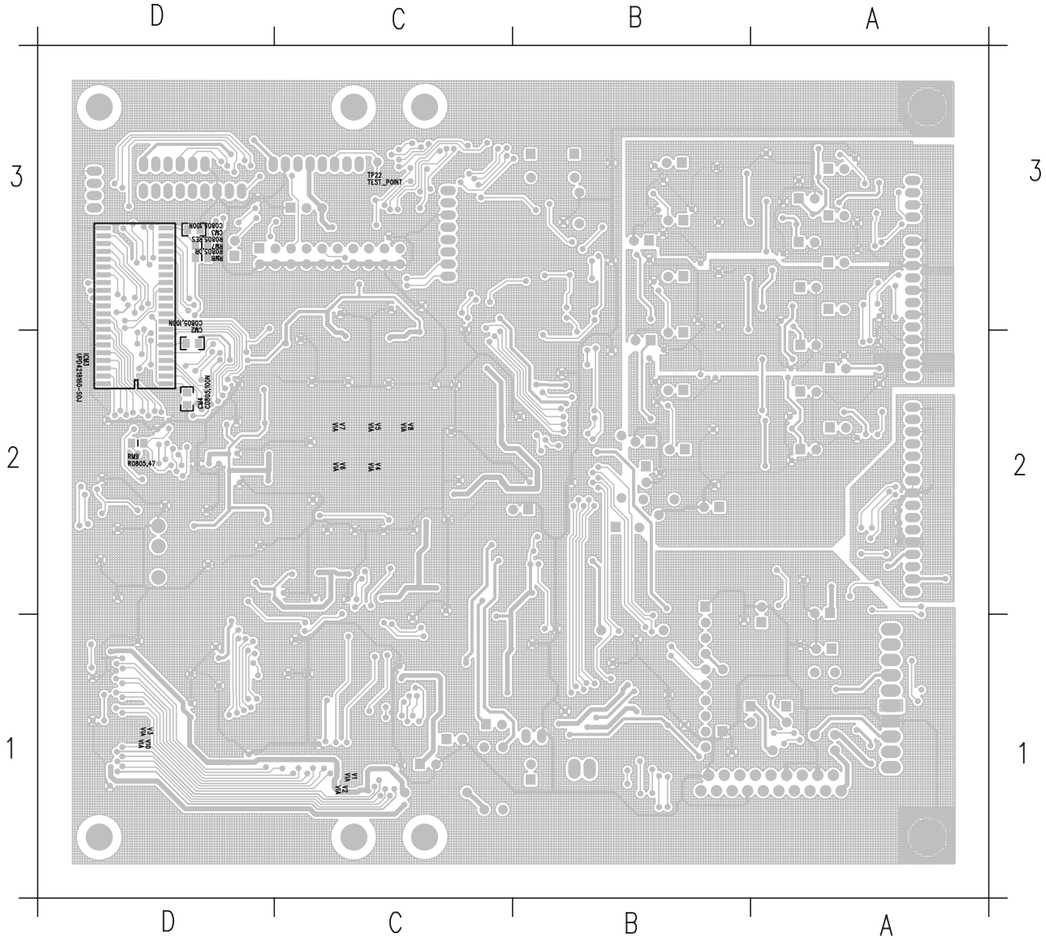
Upgrading of DVD software by way of an Upgrade Disc and Remote Control as given below:

	Message displayed on TV screen
1. With the unit on and no disc in the tray press **DVD** key	
2. Press **Eject** key to open the tray	
3. Press **Menu** key	Setup Menu is displayed
4. Press numerical keys <**7**> <**6**> <**0**>	"*Update Software 1/Yes, 2/No*" is displayed
5. Press numerical keys <**1**>	"*Yes*" is displayed briefly after which the message disappear
6. Insert upgrade disc and press **Eject** key to close tray	
7. The set starts reading upgrade disc	"Color bars" is displayed when ready
8. Press **Power** key to bring the set into Standby mode.	
9. Remove the upgrade disc by power-up the set & eject to open tray.	

DVD MAIN BOARD - TOP VIEW

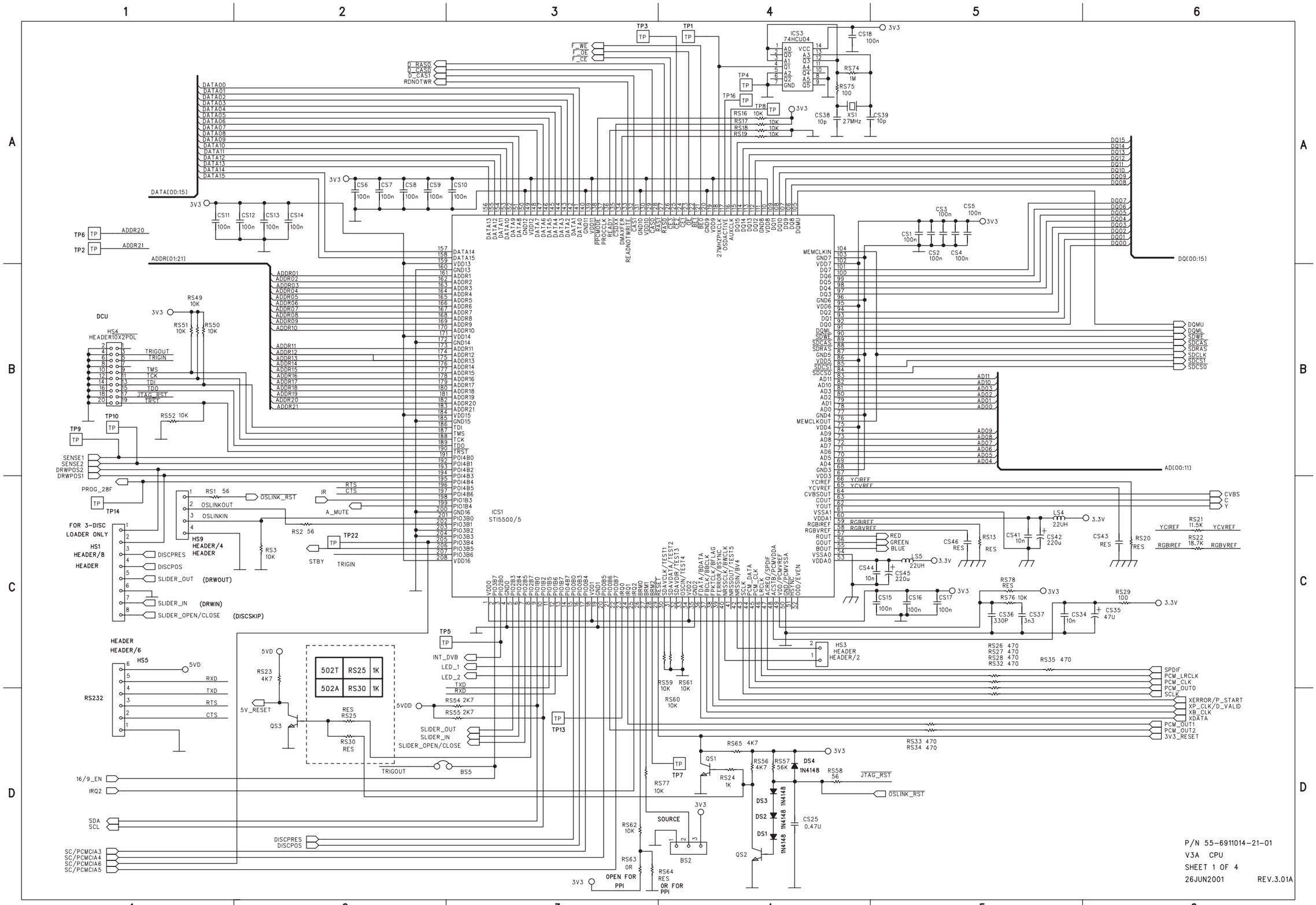


DVD MAIN BOARD - BOTTOM VIEW



9-3

DVD CIRCUIT 1



9-4

DVD CIRCUIT 2

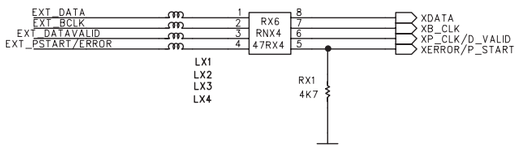
QM3
F_VCC
PROG
4K7
RM11
4K7
RM12
RM6
1K
CM5
100n
1K
RM1
PROG_28F
QM2
RM5
1K
CM6
100n
F_VCC
0R
RS31
PROG
RS36
0R
RESERVE
DATA[00:15]
ADDR[01:21]
ICM2
ADDR17
ADDR16
ADDR15
ADDR14
ADDR13
ADDR12
ADDR11
ADDR10
ADDR09
ADDR19
ADDR18
ADDR08
ADDR07
ADDR06
ADDR05
ADDR04
ADDR03
ADDR02
ADDR01
A15
A14
A13
A12
A11
A10
A9
A8
NC1
NC2
WE
RP
NC3
NC4
RY/BY
A18
A17
A7
A6
A5
A4
A3
A2
A1
A16
BYTE
VSS2
DQ15/A-1
DQ7
DQ14
DQ6
DQ13
DQ5
DQ12
DQ4
VCC
DQ11
DQ3
DQ10
DQ2
DQ9
DQ1
DQ8
DQ0
OE
VSS1
CE
A0
M29F800AT-90N1
DATA15
DATA07
DATA14
DATA06
DATA13
DATA05
DATA12
DATA04
F_VCC
DATA11
DATA03
DATA10
DATA02
DATA09
DATA01
DATA08
DATA00
F_OE
F_CE
47
RM51
F_WE
F_RESET
PROG
RM88
0R
RM56
RES
5VDD
3.3VM
CSM5
100n
CSM6
100n
5VDD
CM1
10N
RM3
47K
RM4
47K
RM2
4K7
QM1
RM10
1K
F_RESET
3.3V
LM10
BLO1RN1-A62
3.3VM
CM22
10u
CM7
100n
ICM5
PRE
E1
E2
VSS
VCC
MODE
SCL
SDA
24C64
5VDD
RM54
0R
RM55
0R
SCL
SDA
DATA[00:15]
ICM3
5VDD
3.3VM
0R
RM8
RES
RM7
CM3
100n
CM2
100n
CM4
100n
RDNOTWR
D_RAS0
DATA00
DATA01
DATA02
DATA03
DATA04
DATA05
DATA06
DATA07
ADDR01
ADDR02
ADDR03
ADDR04
VCC1
I/O1
I/O2
I/O3
I/O4
VCC2
I/O5
I/O6
I/O7
I/O8
NC1
NC2
WE
RAS
NC3
NC4
A0
A1
A2
A3
VCC3
VSS2
I/O16
I/O15
I/O14
I/O13
GND
I/O12
I/O11
I/O10
I/O9
NC5
LCAS
UCAS
OE
A9
A8
A7
A6
A5
A4
VSS1
DATA15
DATA14
DATA13
DATA12
DATA11
DATA10
DATA09
DATA08
D_CAS0
D_CAS1
F_OE
47
RM9
ADDR10
ADDR09
ADDR08
ADDR07
ADDR06
ADDR05
UPD4218160-SOJ
ADDR[01:21]
SD_D[00:15]
ICM4
SD_D00
SD_D01
SD_D02
SD_D03
SD_D04
SD_D05
SD_D06
SD_D07
VCC1
DQ0
DQ1
VSSQ1
DQ2
DQ3
VCCQ1
DQ4
DQ5
VSSQ2
DQ6
DQ7
VCCQ2
LDQM
WE
CAS
RAS
CS
A11
A10
A0
A1
A2
A3
VCC2
VSS2
DQ15
DQ14
VSSQ4
DQ13
DQ12
VCCQ4
DQ11
DQ10
VSSQ3
DQ9
DQ8
VCC3
NC2
UDQM
CLK
CKE
NC1
A9
A8
A7
A6
A5
A4
VSS1
SD_D15
SD_D14
SD_D13
SD_D12
SD_D11
SD_D10
SD_D09
SD_D08
LDQM
SD_WE
SD_CAS
SD_RAS
SD_CS0
UDQM
SD_CLK
RM49
47K
3.3VM
SD_A11
SD_A10
SD_A00
SD_A01
SD_A02
SD_A03
SD_A09
SD_A08
SD_A07
SD_A06
SD_A05
SD_A04
SD_A[00:11]
UPD4516161
3.3VM
CM14
100n
CM15
100n
CM16
100n
CM17
100n
CM18
100n
SD_A[00:11]
SD_D[00:15]
ICM8
SD_D00
SD_D01
SD_D02
SD_D03
SD_D04
SD_D05
SD_D06
SD_D07
VCC1
DQ0
DQ1
VSSQ1
DQ2
DQ3
VCCQ1
DQ4
DQ5
VSSQ2
DQ6
DQ7
VCCQ2
LDQM
WE
CAS
RAS
CS
A11
A10
A0
A1
A2
A3
VCC2
VSS2
DQ15
DQ14
VSSQ4
DQ13
DQ12
VCCQ4
DQ11
DQ10
VSSQ3
DQ9
DQ8
VCC3
NC2
UDQM
CLK
CKE
NC1
A9
A8
A7
A6
A5
A4
VSS1
SD_D15
SD_D14
SD_D13
SD_D12
SD_D11
SD_D10
SD_D09
SD_D08
LDQM
SD_WE
SD_CAS
SD_RAS
SD_CS1
UDQM
SD_CLK
RM70
47K
3.3VM
SD_A11
SD_A10
SD_A00
SD_A01
SD_A02
SD_A03
SD_A09
SD_A08
SD_A07
SD_A06
SD_A05
SD_A04
SD_A[00:11]
UPD4516161
3.3VM
CM23
100n
CM24
100n
CM25
100n
CM26
100n
CM27
100n
SD_A[00:11]
SD_A[00:11]
AD[00:11]
SD_A11
SD_A10
SD_A09
SD_A08
SD_A07
SD_A06
SD_A05
SD_A04
SD_A03
SD_A02
SD_A01
SD_A00
RM41
RM42
RM43
RNX4
47RX4
AD11
AD10
AD09
AD08
AD07
AD06
AD05
AD04
AD03
AD02
AD01
AD00
SD_D[00:15]
DQ[00:15]
SD_D15
SD_D14
SD_D13
SD_D12
SD_D11
SD_D10
SD_D09
SD_D08
SD_D07
SD_D06
SD_D05
SD_D04
SD_D03
SD_D02
SD_D01
SD_D00
RM44
RM45
RM46
RM47
RNX4
47RX4
DQ15
DQ14
DQ13
DQ12
DQ11
DQ10
DQ09
DQ08
DQ07
DQ06
DQ05
DQ04
DQ03
DQ02
DQ01
DQ00
RM64
47K
RM62
47K
RM60
47K
RM65
47K
RM63
47K
RM61
47K
3.3VM
47K
RM67
UDQM
LDQM
SD_WE
SD_CAS
SD_RAS
SD_CS0
SD_CLK
SD_CS1
RM38
RM39
RNX4
47RX4
DQMU
DQML
SDWE
SDCAS
SDRAS
SDCS0
SDCLK
SDCS1
LM1
LM2
LM3
LM4
LM5
LM6
LM7
LM8

P/N 55-6911014-21-01
V3A MEMORY
SHEET 2 OF 4
26JUN2001 REV.3.01A

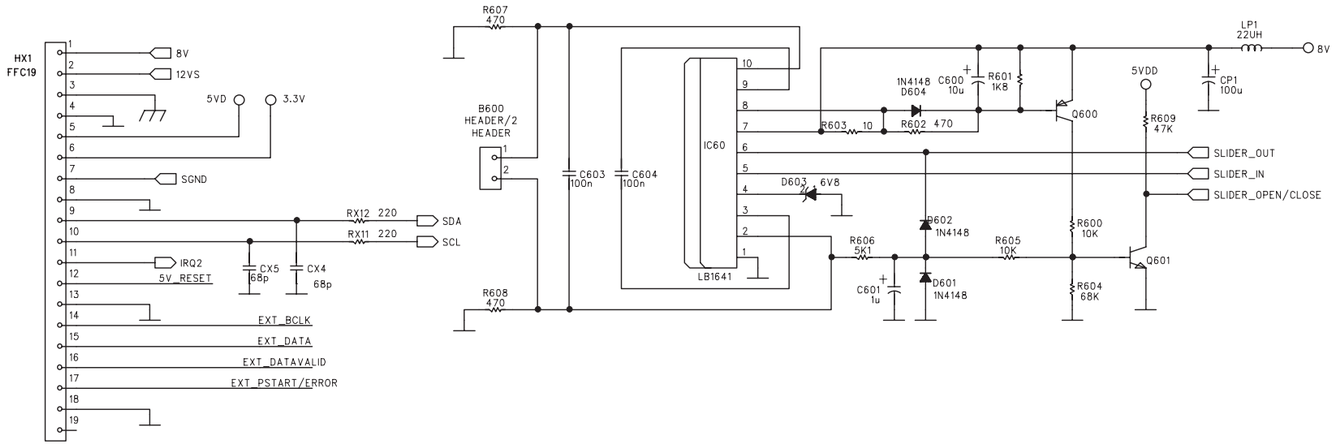
9-5

DVD CIRCUIT 3

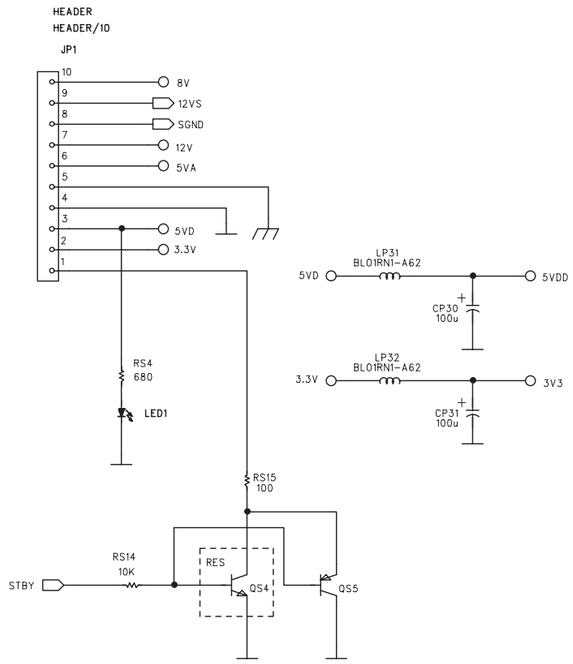
TRANSPORT STREAM MULTIPLEX



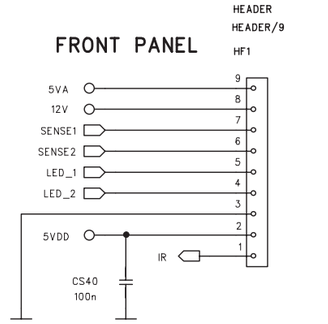
INTERFACE TO DVD FRONT-END

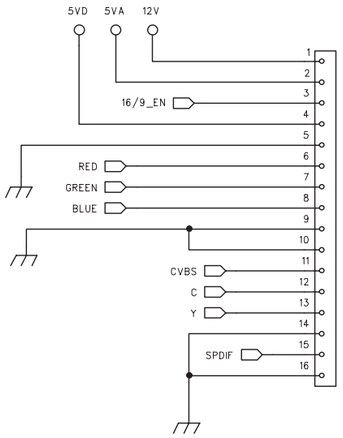


POWER SUPPLY AND STANDBY

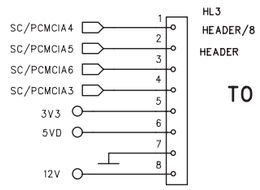


INTERFACE





VIDEO
SCART BD.

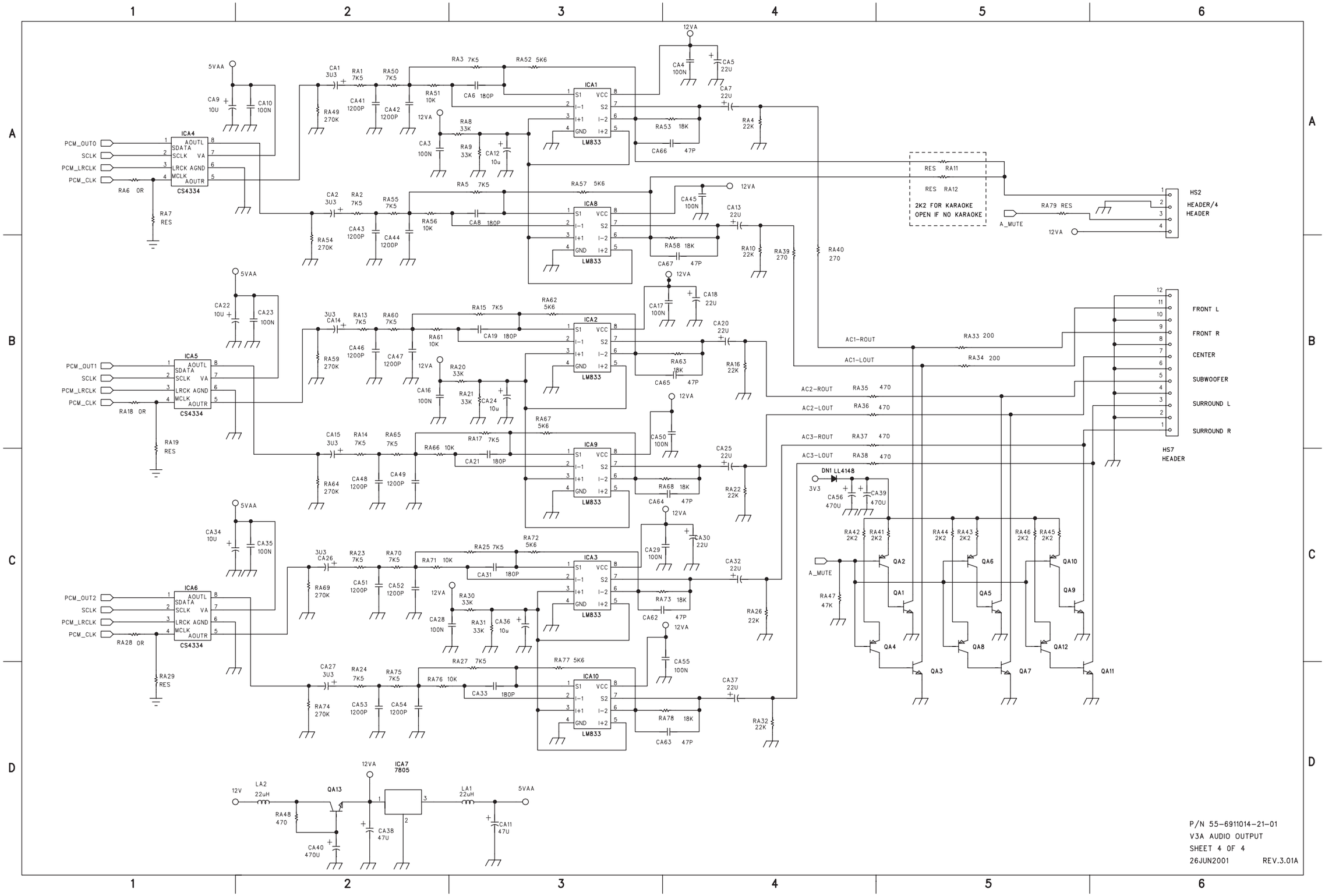


TO AMP

P/N 55-6911014-21-01
V3A - MISCELLANEOUS
SHEET 3 OF 4
26JUN2001 REV.3.01A

9-6

DVD CIRCUIT 4

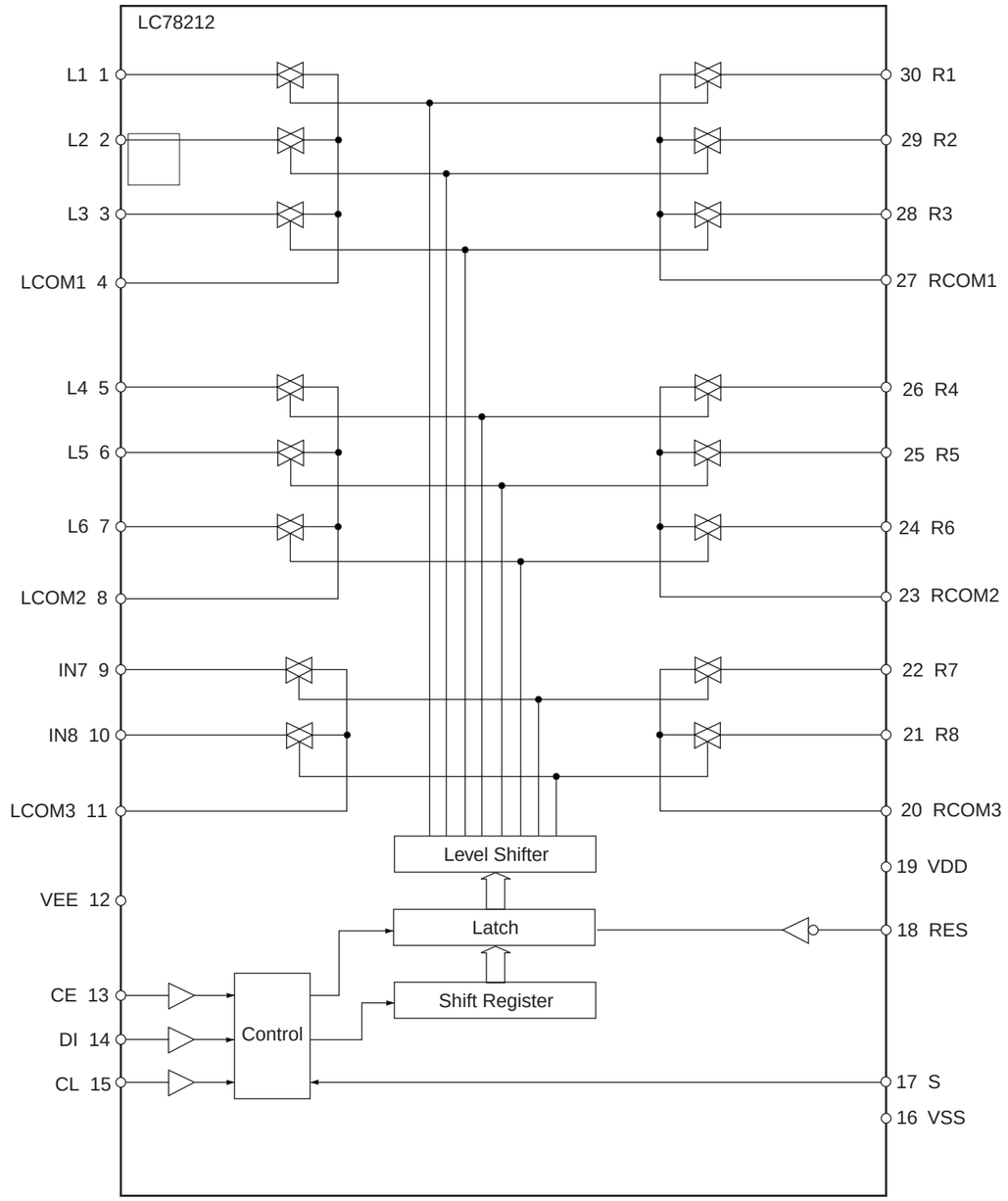


AUDIO SWITCH BOARD

TABLE OF CONTENTS

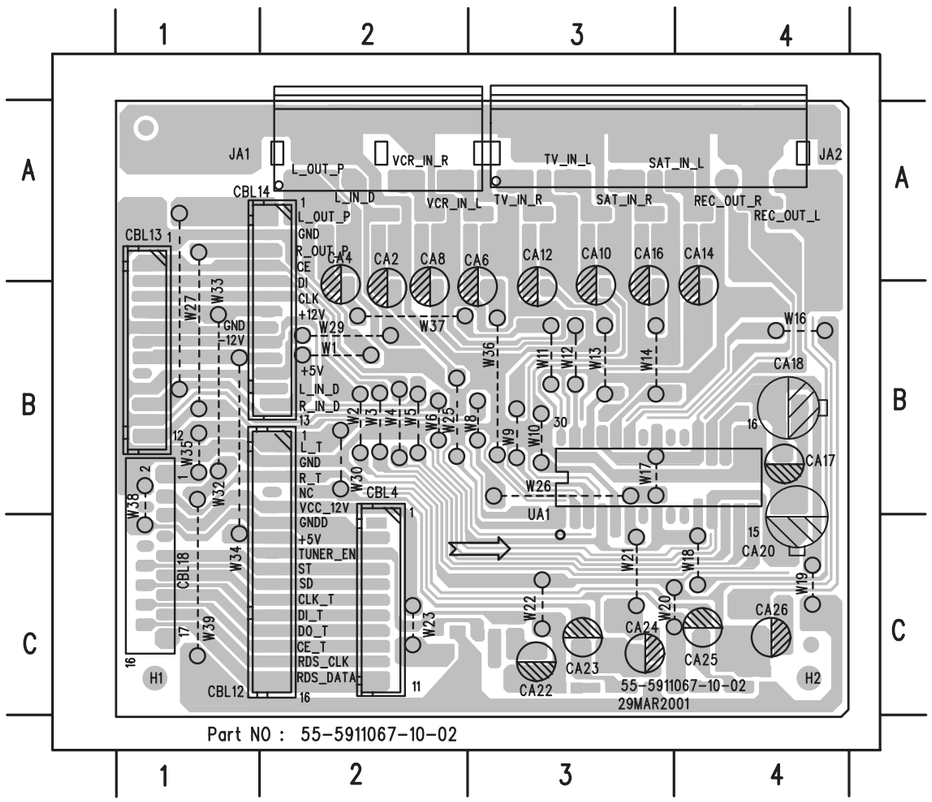
LC78212 Internal Block 10-1
Components & Chips Layout + voltages 10-2
Circuit Diagram 10-3
Electrical parts list 10-4

LC78212 Internal Block

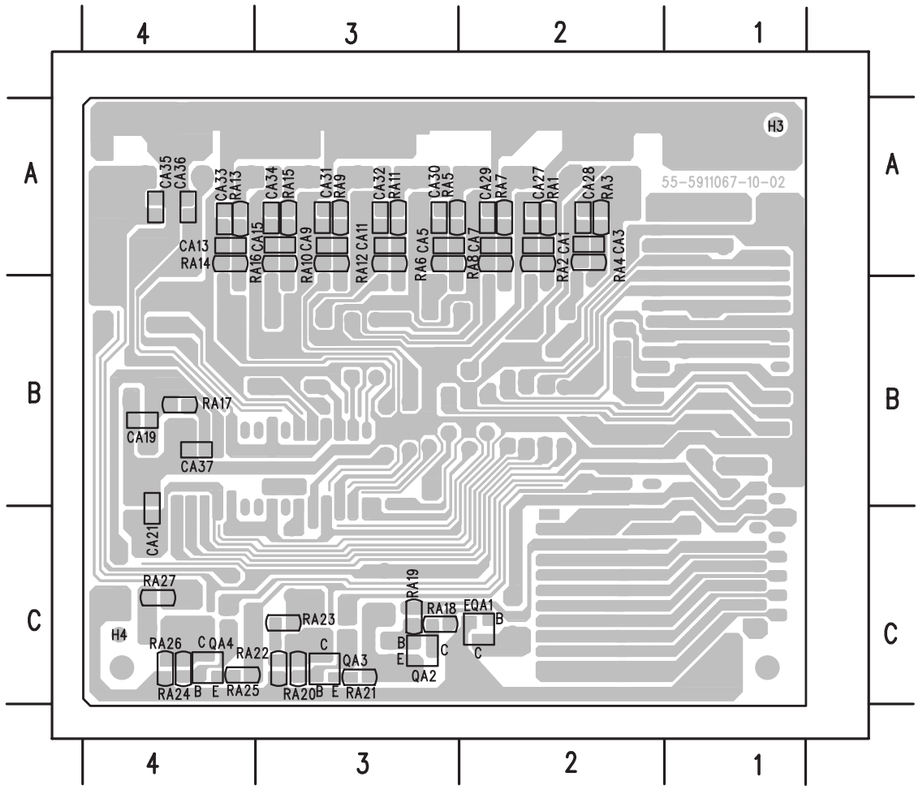


COMPONENTS LAYOUT

C1	sky mount	CA17	B4	CA28	A2	CA5	A3	QA1	C2	RA17	B4	RA3	A2	W13	B3	W26	B3	W4	B2
C2	sky mount	CA18	B4	CA29	A2	CA6	A3	QA2	C3	RA18	C3	RA4	A2	W14	B3	W27	B1	W5	B2
C3	sky mount	CA19	B4	CA3	A2	CA7	A2	QA3	C3	RA19	C3	RA5	A2	W16	B4	W29	B2	W6	B2
C4	sky mount	CA2	A2	CA30	A3	CA8	A2	QA4	C4	RA2	A2	RA6	A3	W17	B3	W3	B2	W8	B3
CA1	A2	CA20	C4	CA31	A3	CA9	A3	RA1	A2	RA20	C3	RA7	A2	W18	C4	W30	B2	W9	B3
CA10	A3	CA21	C4	CA32	A3	CBL12	C2	RA10	A3	RA21	C3	RA8	A2	W19	C4	W32	B1		
CA11	A3	CA22	C3	CA33	A4	CBL13	B1	RA11	A3	RA22	C3	RA9	A3	W2	B2	W33	B1		
CA12	A3	CA23	C3	CA34	A3	CBL14	A2	RA12	A3	RA23	C3	UA1	B3	W20	C3	W34	B1		
CA13	A4	CA24	C3	CA35	A4	CBL18	C1	RA13	A4	RA24	C4	W1	B2	W21	C3	W35	B1		
CA14	A4	CA25	C4	CA36	A4	CBL4	C2	RA14	A4	RA25	C4	W10	B3	W22	C3	W37	B2		
CA15	A3	CA26	C4	CA37	B4	JA1	A2	RA15	A3	RA26	C4	W11	B3	W23	C2	W38	B1		
CA16	A3	CA27	A2	CA4	A2	JA2	C3	RA16	A3	RA27	C4	W12	B3	W25	B2	W39	C1		



CHIPS LAYOUT



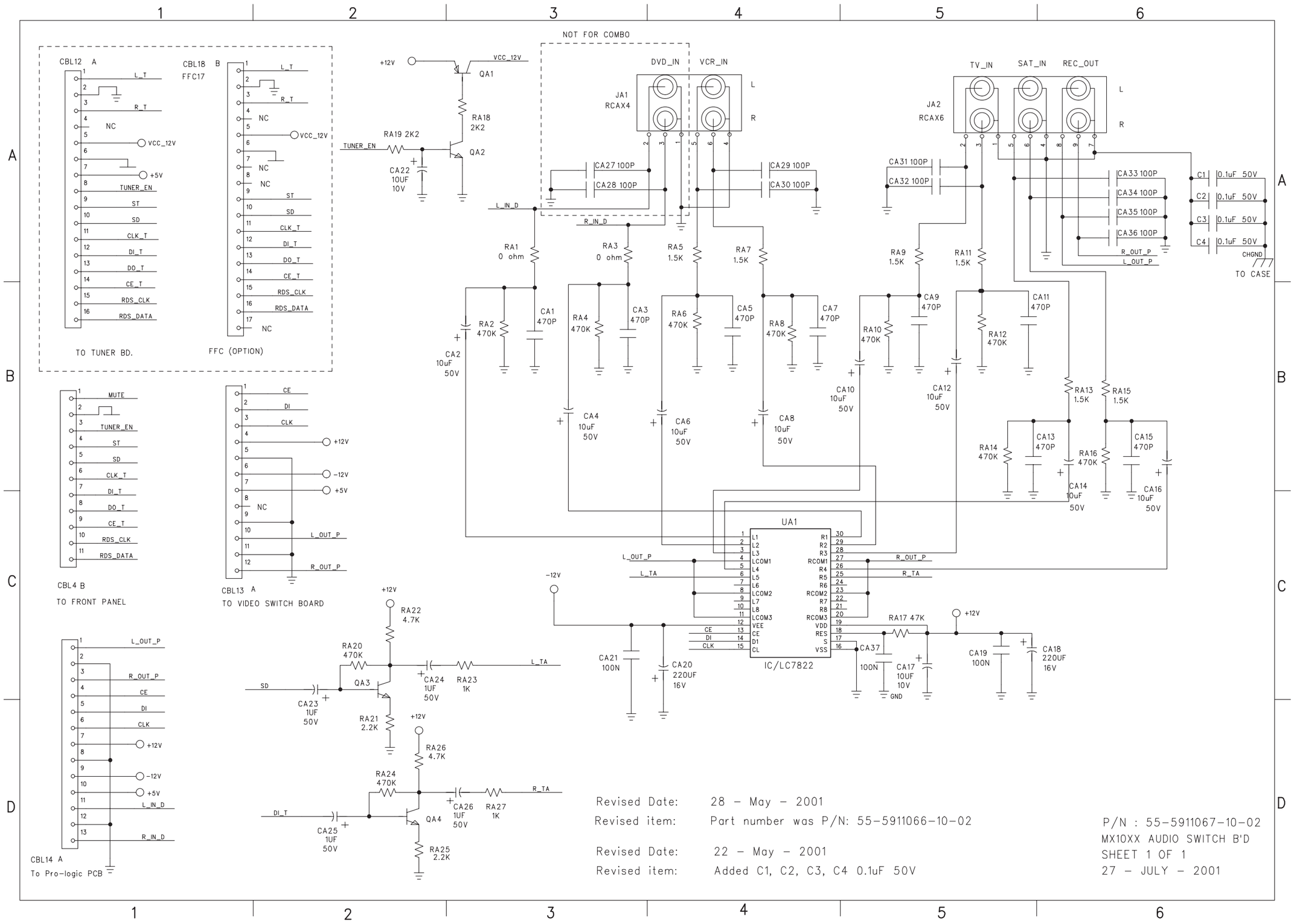
Pin No.	UA1 LC78212
1	0,21V
2	-0,2V
3	-0,2V
4	0,21V
5	-0,2V
6	2,95V
7	0V
8	0,22V
9	0V
10	0V
11	0,22V
12	-12,25V
13	38mV
14	38mV
15	27mV
16	0V
17	0V
18	11,8V
19	11,9V
20	0,28V
21	7mV
22	0,28V
23	11mV
24	0V
25	0,6 - 1,5V
26	-0,16V
27	2,7V
28	-0,16V
29	-0,17V
30	2,7V

Pin No.	QA1	QA2	QA3	QA4
B	11,3V	27,7mV	4,11V	4,04V
C	0,2V	11,28V	5,93V	5,88V
E	11,9V	4,6mV	3,54V	3,46V

Measurement in DVD playing Mode (5,1 Channel Disc)

10-3

CIRCUIT DIAGRAM



Revised Date: 28 – May – 2001
Revised item: Part number was P/N: 55-5911066-10-02

Revised Date: 22 – May – 2001
Revised item: Added C1, C2, C3, C4 0.1uF 50V

P/N : 55-5911067-10-02
MX10XX AUDIO SWITCH B'D
SHEET 1 OF 1
27 – JULY – 2001

C1	A6
C2	A6
C3	A6
C4	A6
CA1	B3
CA10	B5
CA11	B6
CA12	B5
CA13	B6
CA14	B6
CA15	B6
CA16	B6
CA17	C5
CA18	C6
CA19	C5
CA2	B3
CA20	C4
CA21	C4
CA22	A2
CA23	C2
CA24	C2
CA25	D2
CA26	D3
CA27	A3
CA28	A3
CA29	A4
CA3	B4
CA30	A4
CA31	A5
CA32	A5
CA33	A6
CA34	A6
CA35	A6
CA36	A6
CA37	C5
CA4	B3
CA5	B4
CA6	B4
CA7	B4
CA8	B4
CA9	B5
CBL12	A1
CBL13	C2
CBL14	D1
CBL18	A2
CBL4	C1
JA1	A4
JA2	A5
QA1	A3
QA2	A3
QA3	C2
QA4	D2
RA1	A3
RA10	B5
RA11	A5
RA12	B5
RA13	B4
RA14	B5
RA15	B6
RA16	B6
RA17	C5
RA18	A2
RA19	A3
RA2	B3
RA20	C2
RA21	D2
RA22	C2
RA23	C3
RA24	D2
RA25	D2
RA26	D2
RA27	D3
RA3	A4
RA4	B3
RA5	A4
RA6	B4
RA7	A4
RA8	B4
RA9	A5
UA1	C4

10-4

ELECTRICAL PARTS LIST - AUDIO SWITCH BOARD

MISCELLANEOUS

JA1	9965 000 09656	RCA SOCKET 4P RED/WHITE
JA2	9965 000 09656	RCA SOCKET 4P RED/WHITE

CAPACITORS

C1*	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C2*	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C3*	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C4*	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
CA1	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA2	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA3	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA4	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA5	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA6	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA7	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA8	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA9	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA10	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA11	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA12	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA13	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA14	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA15	9965 000 09661	CER SMD 470PF 50V 10% X7R 0805
CA16	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA17	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA18	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CA19	9965 000 09660	CER SMD 0,1UF 50V +80-20% 0805
CA20	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CA21	9965 000 09660	CER SMD 0,1UF 50V +80-20% 0805
CA22	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CA23	9965 000 09653	CAP ELEC 1UF 16V 20%
CA24	9965 000 09653	CAP ELEC 1UF 16V 20%
CA25	9965 000 09653	CAP ELEC 1UF 16V 20%
CA26	9965 000 09653	CAP ELEC 1UF 16V 20%
CA27	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA28	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA29	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA30	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA31	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA32	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA33	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA34	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA35	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA36	9965 000 09659	CER SMD 100PF 50V 10% X7R 0805
CA37	9965 000 09660	CER SMD 0,1UF 50V +80-20% 0805

RESISTORS

RA1	4822 051 20008	JUMPER 0R 0805
RA2	4822 051 20474	470K 5% 0,1W
RA3	4822 051 20008	JUMPER 0R 0805
RA4	4822 051 20474	470K 5% 0,1W
RA5	4822 117 11139	1,5K 1% 0,1W
RA6	4822 051 20474	470K 5% 0,1W
RA7	4822 117 11139	1,5K 1% 0,1W
RA8	4822 051 20474	470K 5% 0,1W
RA9	4822 117 11139	1,5K 1% 0,1W
RA10	4822 051 20474	470K 5% 0,1W
RA11	4822 117 11139	1,5K 1% 0,1W
RA12	4822 051 20474	470K 5% 0,1W
RA13	4822 117 11139	1,5K 1% 0,1W
RA14	4822 051 20474	470K 5% 0,1W
RA15	4822 117 11139	1,5K 1% 0,1W
RA16	4822 051 20474	470K 5% 0,1W
RA17	9965 000 09658	RES SMD 47K OHM 5% 1/10W 0805
RA18	4822 117 11449	2,2K 5% 0,1W 0805
RA19	4822 117 11449	2,2K 5% 0,1W 0805
RA20	4822 051 20474	470K 5% 0,1W
RA21	9965 000 09657	RES SMD 2,7K OHM 5% 1/10W 0805
RA22	4822 051 20472	4,7K 5% 0,1W
RA23	4822 051 20102	1K 5% 0,1W
RA24	4822 051 20474	470K 5% 0,1W
RA25	9965 000 09657	RES SMD 2,7K OHM 5% 1/10W 0805
RA26	4822 051 20472	4,7K 5% 0,1W
RA27	4822 051 20102	1K 5% 0,1W

TRANSISTORS & INTEGRATED CIRCUITS

QA1	4822 130 61074	2SA812M5
QA2	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
QA3	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
QA4	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
UA1	4822 209 13648	LC78212

NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

* ITEMS THAT ARE SKYMOUNTED & NOT IN THE BOARD LAYOUT.

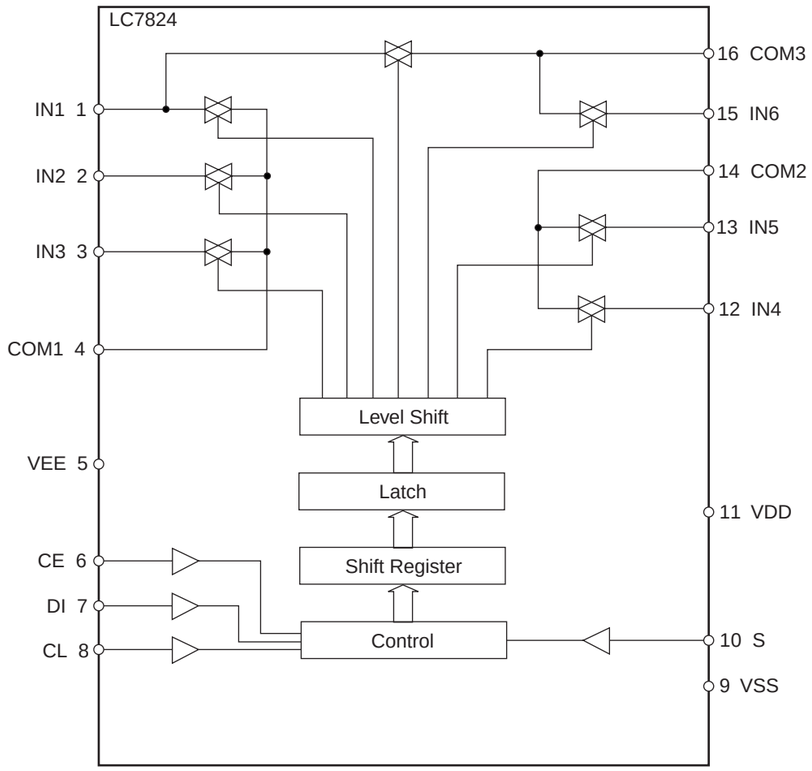
VIDEO SWITCH BOARD

TABLE OF CONTENTS

LC7824 Internal Block 11-1
Components & Chips Layout + voltages 11-2
Circuit Diagram 11-3
Electrical parts list 11-4

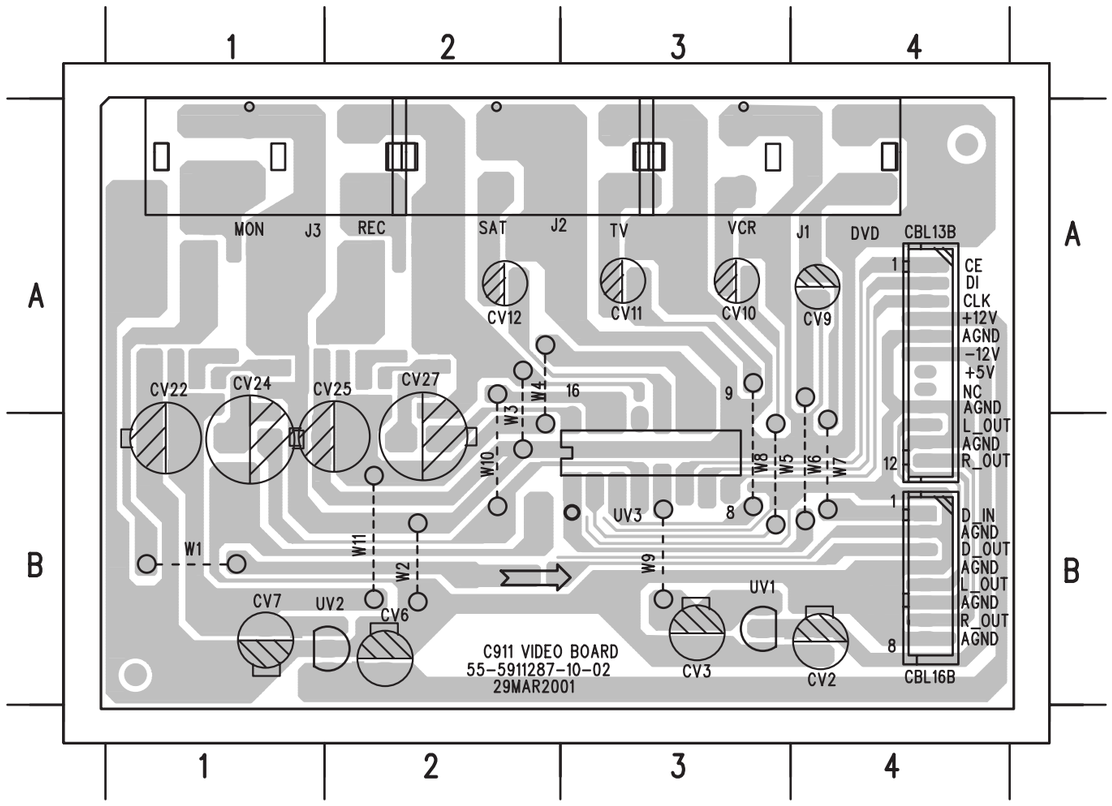
11-1

LC7824 Internal Block

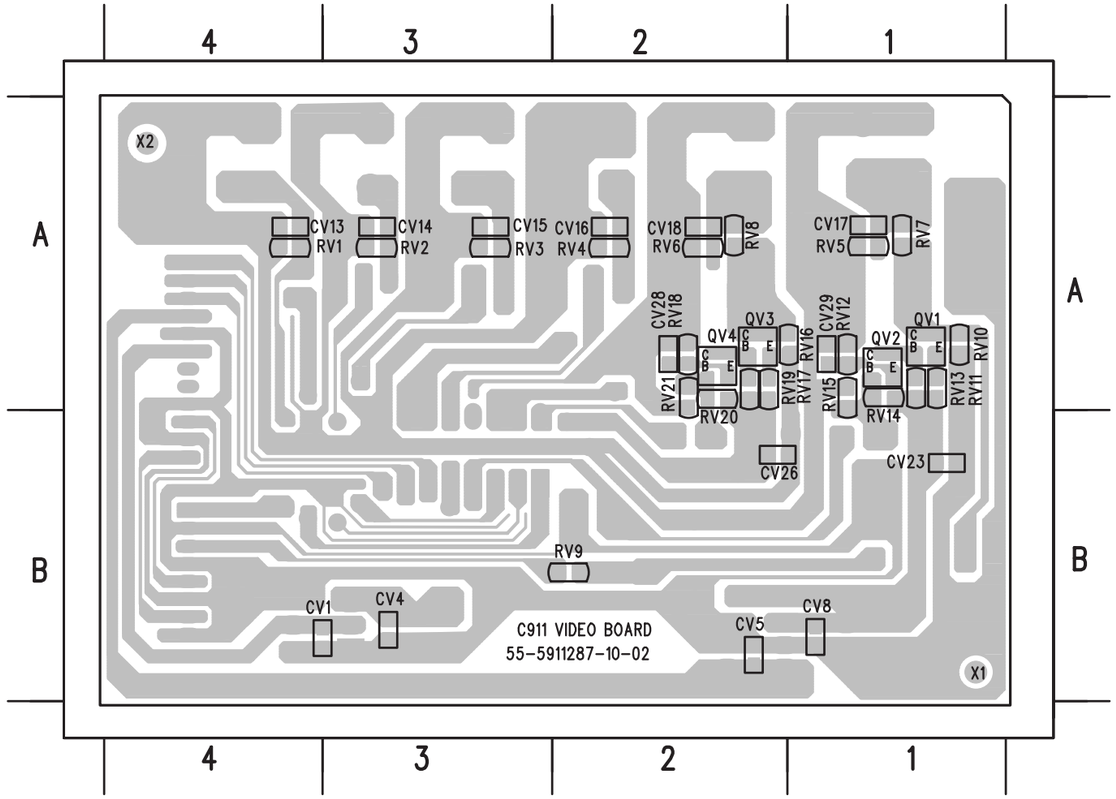


COMPONENTS LAYOUT

C1	SKY MOUNT	CV11	A3	CV17	A1	CV25	B2	CV4	B3	J1	A3	QV4	A2	RV14	A1	RV2	A3	RV6	A2	UV3	B3	W4	A2
C2	SKY MOUNT	CV12	A2	CV18	A2	CV26	B2	CV5	B2	J2	A2	RV1	A4	RV15	A1	RV20	A2	RV7	A1	W1	B1	W5	B3
CBL13B	A4	CV13	A4	CV2	B4	CV27	B2	CV6	B2	J3	A1	RV10	A1	RV16	A1	RV21	A2	RV8	A2	W10	B2	W6	B4
CBL16B	B4	CV14	A3	CV22	B1	CV28	A2	CV7	B1	QV1	A1	RV11	A1	RV17	A2	RV3	A3	RV9	B2	W11	B2	W7	B4
CV1	B3	CV15	A3	CV23	B1	CV29	A1	CV8	B1	QV2	A1	RV12	A1	RV18	A2	RV4	A2	UV1	B3	W2	B2	W8	B3
CV10	A3	CV16	A2	CV24	B1	CV3	B3	CV9	A4	QV3	A2	RV13	A1	RV19	A2	RV5	A1	UV2	B2	W3	A2	W9	B3



CHIPS LAYOUT



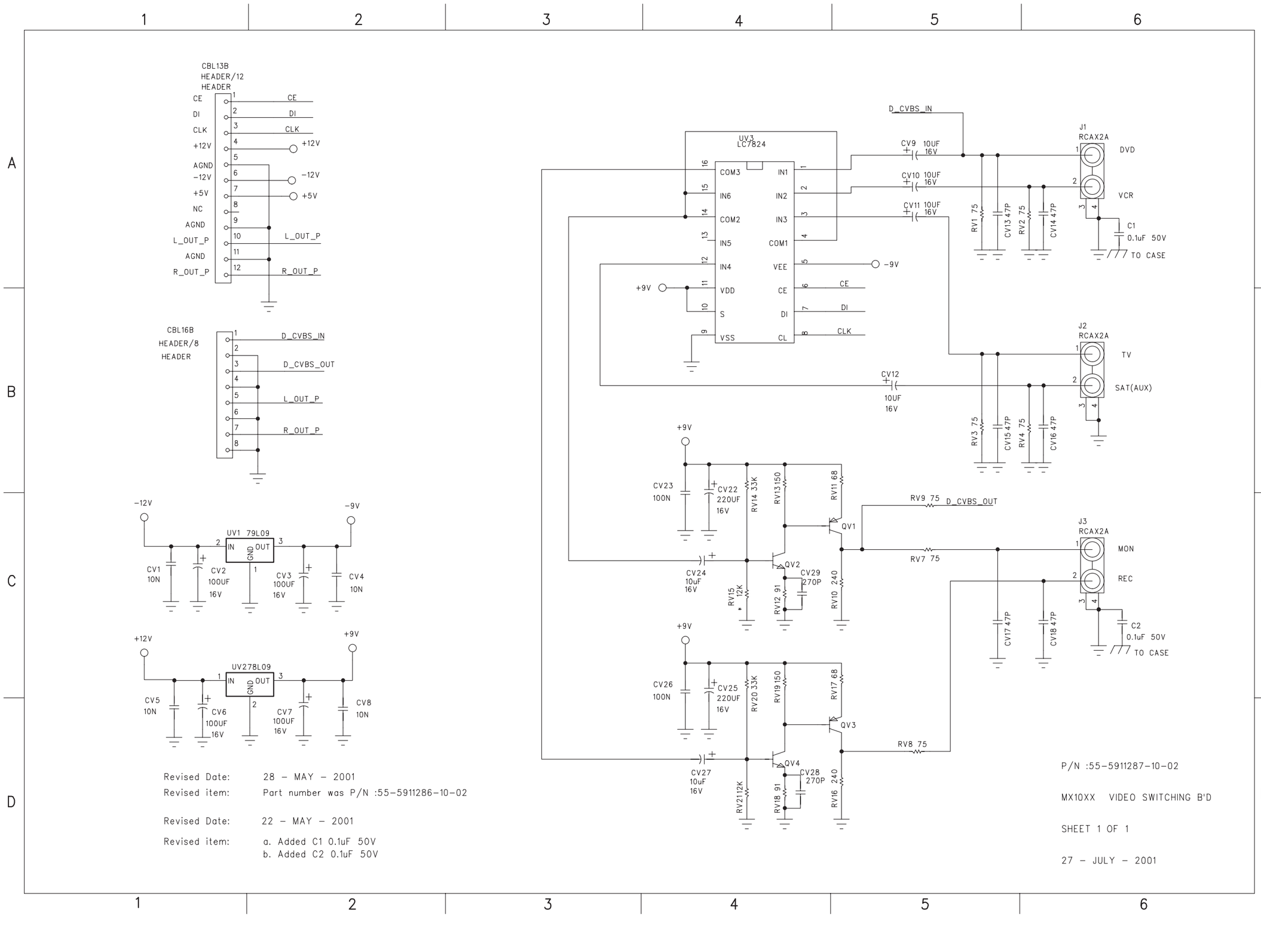
Pin No.	QV1	QV2	QV3	QV4
B	6,8V	2,01V	6,74V	2,04V
C	5,4V	6,8V	5,53V	6,75V
E	7,44V	1,35V	7,4V	1,4V

Measurement in DVD playing Mode (5,1 Channel Disc)

Pin No.	UV1 NJM79L09	UV2 NJM78L09	UV3 LC7824
1	0V	11,88V	1,62V
2	-12,25V	0V	-44mV
3	-8,78V	8,99V	47,5mV
4			1,6V
5			-8,78V
6			38mV
7			37,7mV
8			27mV
9			0V
10			9V
11			9V
12			107mV
13			0V
14			1,6V
15			1,6V
16			1,55V

11-3

CIRCUIT DIAGRAM



C1	A6
C2	C6
CBL13B	A1
CBL16B	B1
CV1	C1
CV10	A5
CV11	A5
CV12	B5
CV13	A5
CV14	A6
CV15	B5
CV16	B6
CV17	C5
CV18	C6
CV2	C1
CV22	B4
CV23	B4
CV24	C4
CV25	C4
CV26	C4
CV27	D4
CV28	D4
CV29	C4
CV3	C2
CV4	C2
CV5	D1
CV6	D1
CV7	D2
CV8	D2
CV9	A5
J1	A6
J2	B6
J3	C6
QV1	B4
QV2	C4
QV3	C4
QV4	D4
RV1	A5
RV10	C4
RV11	B4
RV12	C4
RV13	B4
RV14	B4
RV15	C4
RV16	D4
RV17	C4
RV18	D4
RV19	C4
RV2	A5
RV20	C4
RV21	D4
RV3	B5
RV4	B5
RV7	C5
RV8	D5
RV9	B5
UV1	C2
UV2	D2
UV3	A4

11-4

ELECTRICAL PARTS LIST - VIDEO SWITCH BOARD

MISCELLANEOUS

J1+J2	9965 000 10155	RCA SOCKET 3P YELLOW
J3	9965 000 10154	RCA SOCKET 2P

CAPACITORS

C1*	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C2*	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
CV1	5322 122 34098	10NF 10% X7R 63V
CV2	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CV3	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CV4	5322 122 34098	10NF 10% X7R 63V
CV5	5322 122 34098	10NF 10% X7R 63V
CV6	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CV7	9965 000 10058	CAP ELEC GR 100UF 16V 20%
CV8	5322 122 34098	10NF 10% X7R 63V
CV9	9965 000 10057	CAP ELEC GR 10UF 25V 20%
CV10	9965 000 10057	CAP ELEC GR 10UF 25V 20%
CV11	9965 000 10057	CAP ELEC GR 10UF 25V 20%
CV12	9965 000 10057	CAP ELEC GR 10UF 25V 20%
CV13	4822 126 13692	47PF 1% NP0 63V
CV14	4822 126 13692	47PF 1% NP0 63V
CV15	4822 126 13692	47PF 1% NP0 63V
CV16	4822 126 13692	47PF 1% NP0 63V
CV17	4822 126 13692	47PF 1% NP0 63V
CV18	4822 126 13692	47PF 1% NP0 63V
CV22	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CV23	9965 000 10158	CER SMD 0,1UF 50V +80-20% 0805
CV24	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CV25	9965 000 09655	CAP ELEC GR 220UF 16V 20%
CV26	9965 000 10158	CER SMD 0,1UF 50V +80-20% 0805
CV27	9965 000 09654	CAP ELEC GR 10UF 16V 20%
CV28	9965 000 10159	CER SMD 270PF 50V 10% X7R 0805
CV29	9965 000 10159	CER SMD 270PF 50V 10% X7R 0805

RESISTORS

RV1	4822 117 11927	75R 1% 0,1W
RV2	4822 117 11927	75R 1% 0,1W
RV3	4822 117 11927	75R 1% 0,1W
RV4	4822 117 11927	75R 1% 0,1W
RV7	4822 117 11927	75R 1% 0,1W
RV8	4822 117 11927	75R 1% 0,1W
RV9	4822 117 11927	75R 1% 0,1W
RV10	9965 000 10157	RES SMD 240 OHM 5% 1/10W 0805
RV11	4822 117 12521	68R 1% 0,1W
RV12	4822 051 20919	91R 5% 0,1W
RV13	4822 117 10353	150R 1% 0,1W
RV14	4822 051 20333	33K 5% 0,1W
RV15	9965 000 10156	RES SMD 12K OHM 5% 1/10W 0805
RV16	9965 000 10157	RES SMD 240 OHM 5% 1/10W 0805
RV17	4822 117 12521	68R 1% 0,1W
RV18	4822 051 20919	91R 5% 0,1W
RV19	4822 117 10353	150R 1% 0,1W
RV20	4822 051 20333	33K 5% 0,1W
RV21	9965 000 10156	RES SMD 12K OHM 5% 1/10W 0805

TRANSISTORS & INTEGRATED CIRCUITS

QV1	9965 000 10110	TR SMD T2907A HFE300 200MHZ
QV2	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
QV3	9965 000 10110	TR SMD T2907A HFE300 200MHZ
QV4	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
UV1	9965 000 10153	IC NJM79L09A VOLT REG 9V 100MA
UV2	9965 000 10152	IC NJM78L09 VOLT REG 9V 100MA
UV3	4822 209 31538	LC7824

NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

* ITEMS THAT ARE SKYMOUNTED & NOT IN THE BOARD LAYOUT.

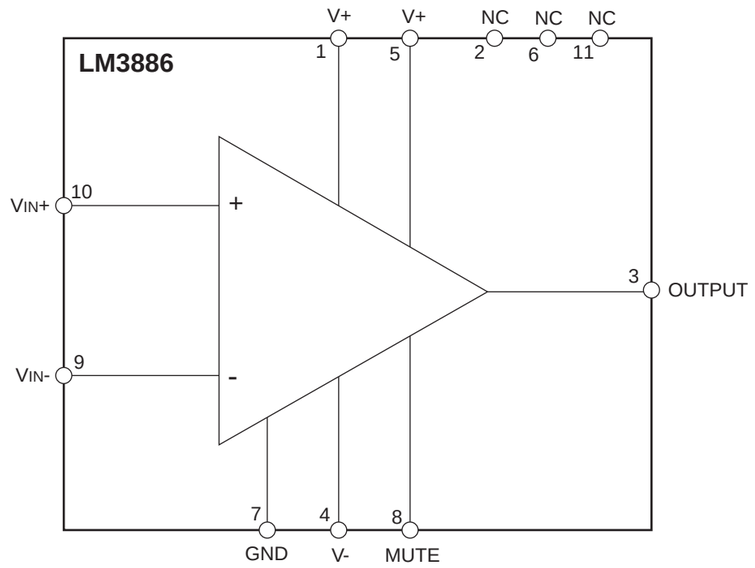
POWER AMPLIFIER BOARD

TABLE OF CONTENTS

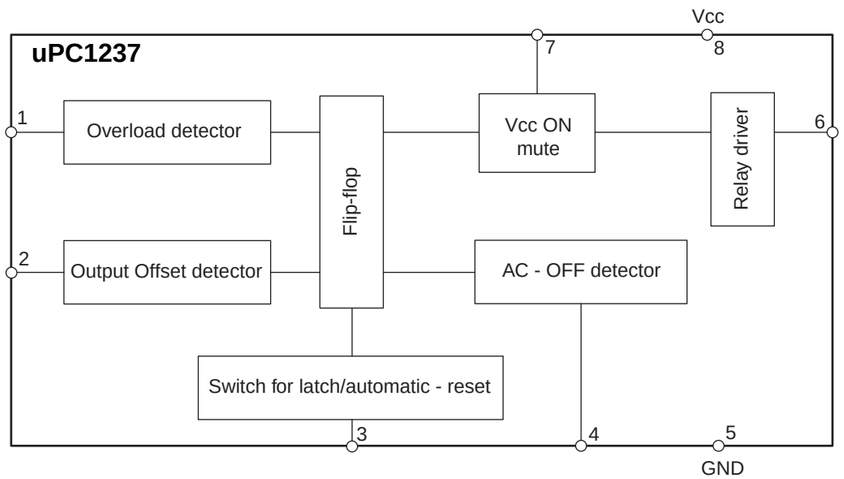
LM3886 & UPC1237 Internal Block 12-1
Components Layout + Voltages 12-2
Circuit Diagram 12-3
Electrical parts list 12-4

12-1

LM3886 INTERNAL BLOCK



uPC1237 INTERNAL BLOCK



12-2

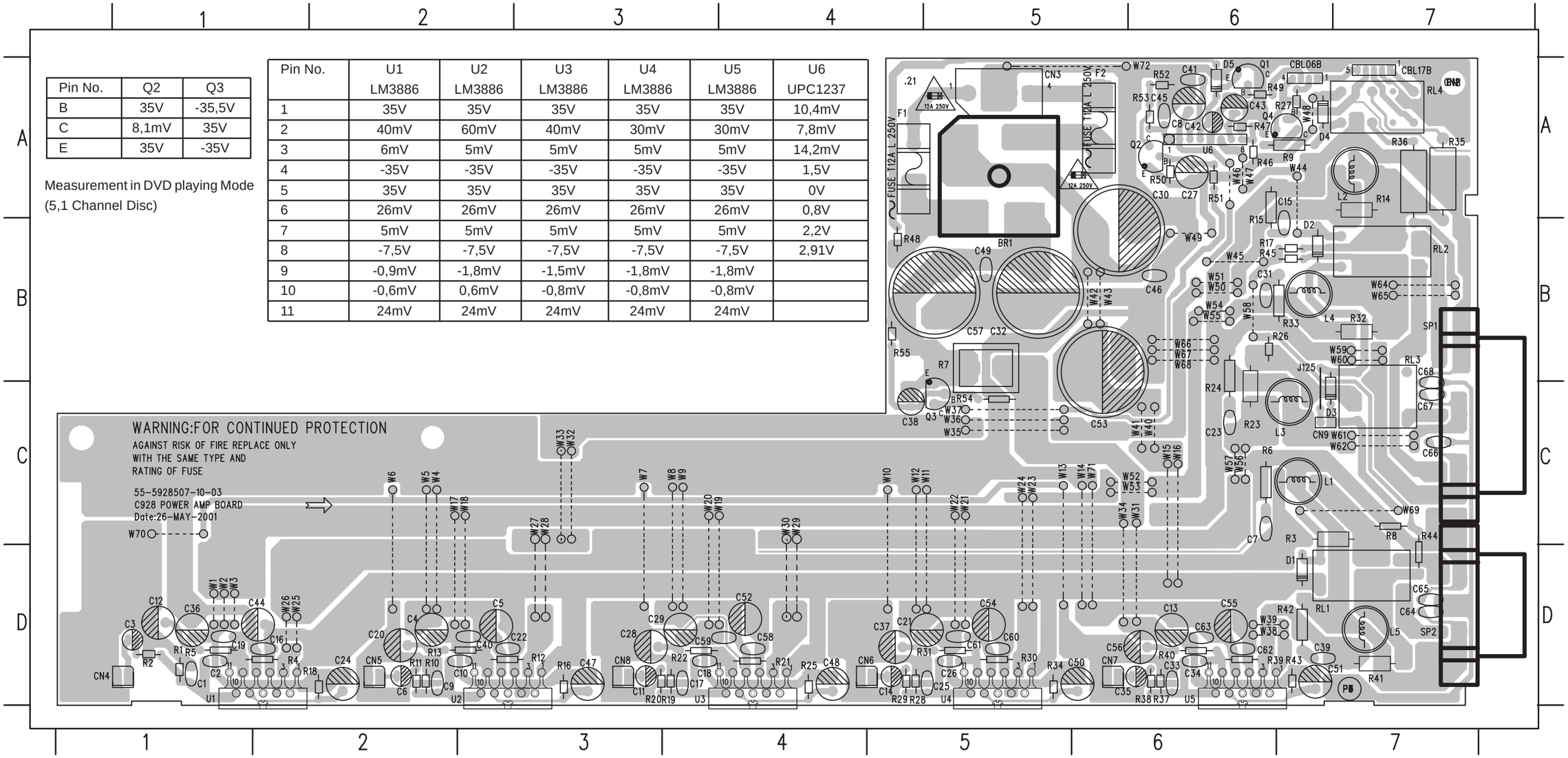
COMPONENT LAYOUT

BR1	A5	C29	D4	C49	B5	C7	C6	L3	C7	R23	C6	R43	D7	SP1	C7	W22	D5	W42	B6	W62	C7
C1	D1	C3	D1	C5	D3	C8	A6	L4	B7	R24	C6	R44	D7	SP2	D7	W23	C5	W43	B6	W64	B7
C10	D3	C30	B6	C50	D6	C9	D2	L5	D7	R25	D4	R45	B7	U1	D1	W24	C5	W44	A7	W65	B7
C11	D3	C31	B6	C51	D7	CBL06B	A7	Q1	A6	R26	B6	R46	A6	U2	D3	W25	D2	W45	B6	W66	B6
C12	D1	C32	B5	C52	D4	CBL17B	A7	Q2	A6	R27	A7	R47	A6	U3	D4	W26	D2	W46	A6	W67	B6
C13	D6	C33	D6	C53	C6	CN3	A5	Q3	C5	R28	D5	R48	B5	U4	D5	W27	D3	W47	A6	W68	B6
C14	D5	C34	D6	C54	D5	CN4	D1	Q4	A7	R29	D5	R49	A6	U5	D6	W28	D3	W48	A7	W69	C7
C15	B7	C35	D6	C55	D6	CN5	D2	R1	D1	R3	C7	R5	D1	U6	A6	W29	D4	W49	B6	W7	C3
C16	D2	C36	D1	C56	D6	CN6	D4	R10	D2	R30	D5	R50	A6	W1	D1	W3	D1	W5	C2	W70	C1
C17	D4	C37	D5	C57	B5	CN7	D6	R11	D2	R31	D5	R51	A6	W10	C5	W30	D4	W50	B6	W71	C6
C18	D4	C38	C5	C58	D4	CN8	D3	R12	D3	R32	B7	R52	A6	W11	C5	W31	D6	W51	B6	W72	A6
C19	D1	C39	D7	C59	D4	CN9	C7	R13	D2	R33	B7	R53	A6	W12	C5	W32	C3	W52	C6	W8	C4
C2	D1	C4	D2	C6	D2	D1	D7	R14	A7	R34	D5	R54	C5	W13	C5	W33	C3	W53	C6	W9	C4
C20	D2	C40	D3	C60	D5	D2	B7	R15	A6	R35	A7	R55	B5	W14	C6	W34	D6	W54	B6		
C21	D5	C41	A6	C61	D5	D3	C7	R16	D3	R36	A7	R6	C6	W15	C6	W35	C5	W55	B6		
C22	D3	C42	A6	C62	D6	D4	A7	R17	B7	R37	D6	R7	B5	W16	C6	W36	C5	W56	C6		
C23	C6	C43	A6	C63	D6	D5	A6	R18	D2	R38	D6	R8	C7	W17	D2	W37	C5	W57	C6		
C24	D2	C44	D2	C64	D7	F1	A5	R19	D4	R39	D6	R9	A7	W18	D3	W38	D6	W58	B6		
C25	D5	C45	A6	C65	D7	F2	A6	R2	D1	R4	D2	RL1	D7	W19	D4	W39	D6	W59	B7		
C26	D5	C46	B6	C66	C7	J125	B7	R20	D3	R40	D6	RL2	B7	W2	D1	W4	C2	W6	C2		
C27	A6	C47	D3	C67	C7	L1	C7	R21	D4	R41	D7	RL3	C7	W20	D4	W40	C6	W60	B7		
C28	D3	C48	D4	C68	C7	L2	A7	R22	D4	R42	D7	RL4	A7	W21	D5	W41	C6	W61	C7		

Pin No.	Q2	Q3
B	35V	-35,5V
C	8,1mV	35V
E	35V	-35V

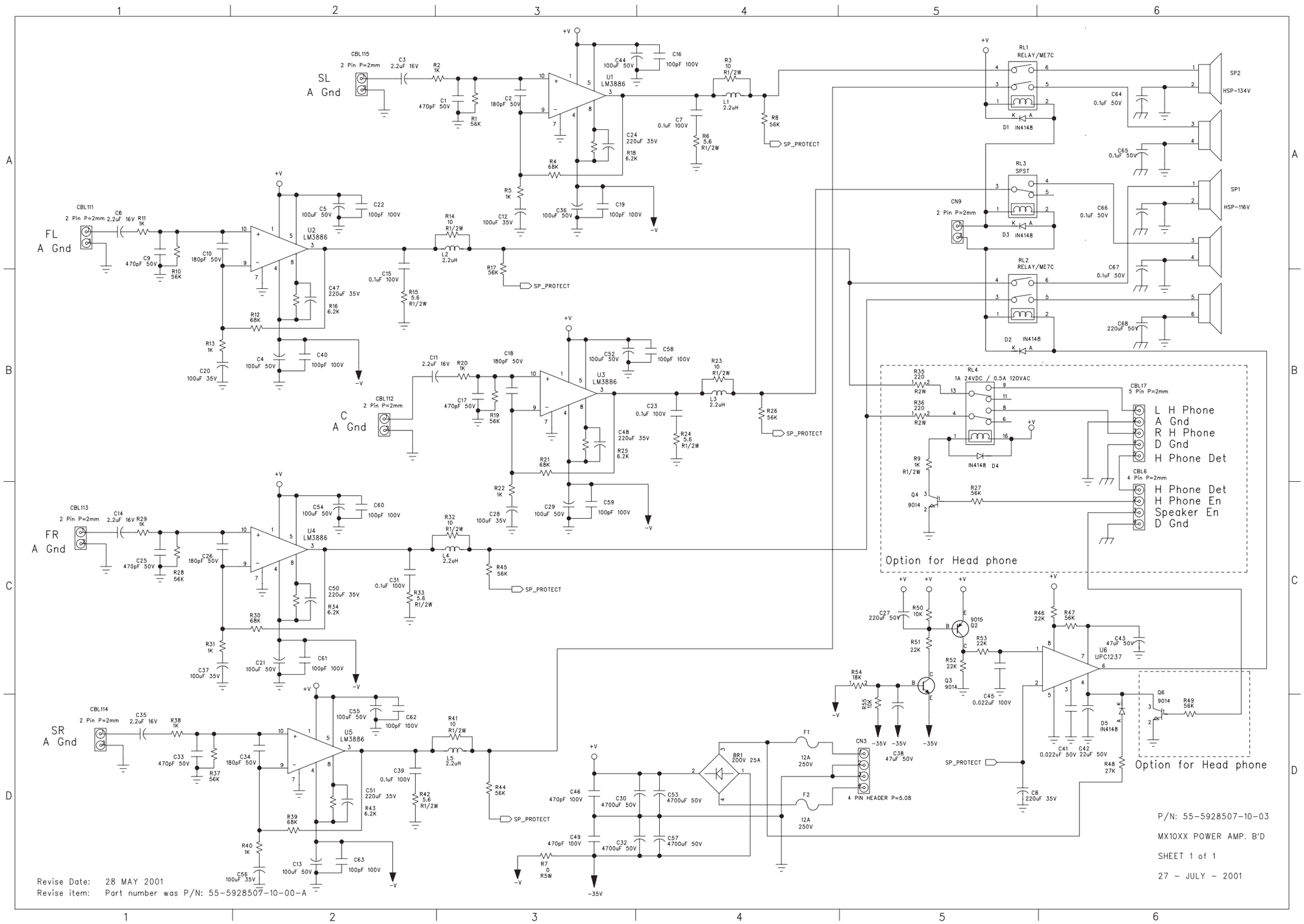
Measurement in DVD playing Mode
(5,1 Channel Disc)

Pin No.	U1 LM3886	U2 LM3886	U3 LM3886	U4 LM3886	U5 LM3886	U6 UPC1237
1	35V	35V	35V	35V	35V	10,4mV
2	40mV	60mV	40mV	30mV	30mV	7,8mV
3	6mV	5mV	5mV	5mV	5mV	14,2mV
4	-35V	-35V	-35V	-35V	-35V	1,5V
5	35V	35V	35V	35V	35V	0V
6	26mV	26mV	26mV	26mV	26mV	0,8V
7	5mV	5mV	5mV	5mV	5mV	2,2V
8	-7,5V	-7,5V	-7,5V	-7,5V	-7,5V	2,91V
9	-0,9mV	-1,8mV	-1,5mV	-1,8mV	-1,8mV	
10	-0,6mV	0,6mV	-0,8mV	-0,8mV	-0,8mV	
11	24mV	24mV	24mV	24mV	24mV	



12-3

CIRCUIT DIAGRAM



BR1	D4	L5	D3
C1	A3	Q2	C5
C10	A1	Q3	C5
C11	B2	Q4	C5
C12	A3	Q6	D6
C13	D2	R1	A3
C14	C1	R10	A1
C15	A2	R11	A1
C16	A4	R12	B2
C17	B3	R13	B1
C18	B3	R14	A3
C19	A3	R15	B2
C2	A3	R16	B2
C20	B1	R17	A3
C21	C2	R18	A3
C22	A2	R19	B3
C23	B4	R2	A2
C24	A3	R20	B3
C25	C1	R21	B3
C26	C1	R22	C3
C27	C5	R23	B4
C28	C3	R24	B4
C29	C3	R25	B3
C3	A2	R26	B4
C30	D3	R27	C5
C31	C2	R28	C1
C32	D3	R29	C1
C33	D1	R3	A4
C34	D2	R30	C2
C35	D1	R31	C1
C36	A3	R32	C3
C37	C1	R33	C2
C38	D5	R34	C2
C39	D2	R35	B5
C4	B2	R36	B5
C40	B2	R37	D1
C41	D6	R38	D1
C42	D6	R39	D2
C43	C6	R4	A3
C44	A3	R40	D2
C45	C5	R41	D3
C46	D3	R42	D2
C47	B2	R43	D2
C48	B3	R44	D3
C49	D3	R45	C3
C5	A2	R46	C6
C50	C2	R47	C6
C51	D2	R48	D6
C52	B3	R49	D6
C53	D4	R5	A3
C54	C2	R50	C5
C55	D2	R51	C5
C56	D2	R52	C5
C57	D4	R53	C5
C58	B4	R54	C5
C59	C3	R55	D5
C6	A1	R6	A4
C60	C2	R7	D3
C61	C2	R8	A4
C62	D2	R9	B5
C63	D2	RL1	A5
C64	A6	RL2	B5
C65	A6	RL3	A5
C66	A6	RL4	B5
C67	A6	SP1	A6
C68	B6	SP2	A6
C7	A4	U1	A3
C8	D5	U2	A2
C9	A1	U3	B3
CBL17	B6	U4	C2
CBL6	C6	U5	D2
CN3	D5	U6	C6
CN4	A2		
CN5	A1		
CN6	C1		
CN7	D1		
CN8	B2		
CN9	A5		
D1	A5		
D2	B5		
D3	A5		
D4	B5		
D5	D6		
F1	D4		
F2	D4		
L1	A4		
L2	A3		
L3	B4		
L4	C3		

ELECTRICAL PARTS LIST - POWER AMPLIFIER BOARD

MISCELLANEOUS

BR1	9965 000 10084		BRIDGE RECT MB252 25A 200V
F1	9965 000 10107	⚠	FUSE T12A 250V
F2	9965 000 10107	⚠	FUSE T12A 250V
RL1	9965 000 10105		RELAY MAINATURE 12VDC/5A 2P1T
RL2	9965 000 10105		RELAY MAINATURE 12VDC/5A 2P1T
RL3	9965 000 10106		RELAY MAINATURE 12VDC/12A 2P1T
SP1	9965 000 10109		SPEAKER TERMINAL 6P
SP2	9965 000 10108		SPEAKER TERMINAL 4P

CAPACITORS

C1	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C2	9965 000 10086	CAP CER KT 180PF 50V 10% SL
C3	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C4	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C5	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C6	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C7	9965 000 09666	CAP CER 0,1UF 100V 20% Y5V
C8	9965 000 10091	CAP ELEC RX 220UF 35V 20%
C9	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C10	9965 000 10086	CAP CER KT 180PF 50V 10% SL
C11	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C12	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C13	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C14	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C15	9965 000 09666	CAP CER 0,1UF 100V 20% Y5V
C16	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C17	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C18	9965 000 10086	CAP CER KT 180PF 50V 10% SL
C19	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C20	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C21	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C22	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C23	9965 000 09666	CAP CER 0,1UF 100V 20% Y5V
C24	9965 000 10091	CAP ELEC RX 220UF 35V 20%
C25	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C26	9965 000 10086	CAP CER KT 180PF 50V 10% SL
C27	9965 000 10090	CAP ELEC KM 220UF 50V 20%
C28	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C29	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C30	9965 000 10092	CAP ELEC SG 4700UF 50V 20%
C31	9965 000 09666	CAP CER 0,1UF 100V 20% Y5V
C32	9965 000 10092	CAP ELEC SG 4700UF 50V 20%
C33	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C34	9965 000 10086	CAP CER KT 180PF 50V 10% SL
C35	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C36	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C37	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C38	9965 000 10093	CAP ELEC GS 47UF 50V 20%
C39	9965 000 09666	CAP CER 0,1UF 100V 20% Y5V
C40	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C41	9965 000 10087	CAP CER KK 0,022UF 50V 10% Z5U
C42	9965 000 10060	CAP ELEC GR 22UF 16V 20%
C43	9965 000 10093	CAP ELEC GS 47UF 50V 20%
C44	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C45	9965 000 10087	CAP CER KK 0,022UF 50V 10% Z5U
C46	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C47	9965 000 10091	CAP ELEC RX 220UF 35V 20%
C48	9965 000 10091	CAP ELEC RX 220UF 35V 20%
C49	9965 000 10088	CAP CER KT 470PF 100V 10% SL
C50	9965 000 10091	CAP ELEC RX 220UF 35V 20%
C51	9965 000 10091	CAP ELEC RX 220UF 35V 20%
C52	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C53	9965 000 10092	CAP ELEC SG 4700UF 50V 20%
C54	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C55	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C56	9965 000 10089	CAP ELEC GR 100UF 50V 20%
C57	9965 000 10092	CAP ELEC SG 4700UF 50V 20%
C58	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C59	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C60	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C61	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C62	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C63	9965 000 10085	CAP CER KT 100PF 100V 10% SL
C64	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C65	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C66	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C67	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C68	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
R1	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R2	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R3	9965 000 10094	RES CF 10 OHM 5% 1/2W AXIAL
R4	9965 000 10101	RES CF 68K OHM 5% 1/6W AXIAL
R5	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R6	9965 000 10099	RES CF 5,6 OHM 5% 1/2W AXIAL
R8	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R10	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R11	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R12	9965 000 10101	RES CF 68K OHM 5% 1/6W AXIAL
R13	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R14	9965 000 10094	RES CF 10 OHM 5% 1/2W AXIAL
R15	9965 000 10099	RES CF 5,6 OHM 5% 1/2W AXIAL
R16	9965 000 10100	RES CF 6,2K OHM 5% 1/6W AXIAL
R17	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R18	9965 000 10100	RES CF 6,2K OHM 5% 1/6W AXIAL
R19	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R20	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R21	9965 000 10101	RES CF 68K OHM 5% 1/6W AXIAL
R22	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R23	9965 000 10094	RES CF 10 OHM 5% 1/2W AXIAL
R24	9965 000 10099	RES CF 5,6 OHM 5% 1/2W AXIAL
R25	9965 000 10100	RES CF 6,2K OHM 5% 1/6W AXIAL
R26	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R28	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R29	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL

12-4

ELECTRICAL PARTS LIST - POWER AMPLIFIER BOARD

R30	9965 000 10101	RES CF 68K OHM 5% 1/6W AXIAL
R31	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R32	9965 000 10094	RES CF 10 OHM 5% 1/2W AXIAL
R33	9965 000 10099	RES CF 5,6 OHM 5% 1/2W AXIAL
R34	9965 000 10100	RES CF 6,2K OHM 5% 1/6W AXIAL
R37	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R38	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R39	9965 000 10101	RES CF 68K OHM 5% 1/6W AXIAL
R40	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R41	9965 000 10094	RES CF 10 OHM 5% 1/2W AXIAL
R42	9965 000 10099	RES CF 5,6 OHM 5% 1/2W AXIAL
R43	9965 000 10100	RES CF 6,2K OHM 5% 1/6W AXIAL
R44	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R45	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R46	9965 000 10096	RES CF 22K OHM 5% 1/6W AXIAL
R47	9965 000 10098	RES CF 56K OHM 5% 1/6W AXIAL
R48	9965 000 10097	RES CF 27K OHM 5% 1/6W AXIAL
R50	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL
R51	9965 000 10096	RES CF 22K OHM 5% 1/6W AXIAL
R52	9965 000 10096	RES CF 22K OHM 5% 1/6W AXIAL
R53	9965 000 10096	RES CF 22K OHM 5% 1/6W AXIAL
R54	9965 000 10095	RES CF 18K OHM 5% 1/6W AXIAL
R55	9965 000 09674	RES CF 10K OHM 5% 1/6W AXIAL

COILS & FILTERS

L1	9965 000 10102	AIR COIL 2,2UH 10%
L2	9965 000 10102	AIR COIL 2,2UH 10%
L3	9965 000 10102	AIR COIL 2,2UH 10%
L4	9965 000 10102	AIR COIL 2,2UH 10%
L5	9965 000 10102	AIR COIL 2,2UH 10%

DIODES

D1	4822 130 30621	1N4148
D2	4822 130 30621	1N4148
D3	4822 130 30621	1N4148
D5	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

Q2	4822 130 63082	9015C
Q3	4822 130 60644	9014C
U1	9965 000 10103	IC LM3886T AUDIO AMP
U2	9965 000 10103	IC LM3886T AUDIO AMP
U3	9965 000 10103	IC LM3886T AUDIO AMP
U4	9965 000 10103	IC LM3886T AUDIO AMP
U5	9965 000 10103	IC LM3886T AUDIO AMP
U6	9965 000 10104	IC UPC1237 SPEAKER PROTECTION

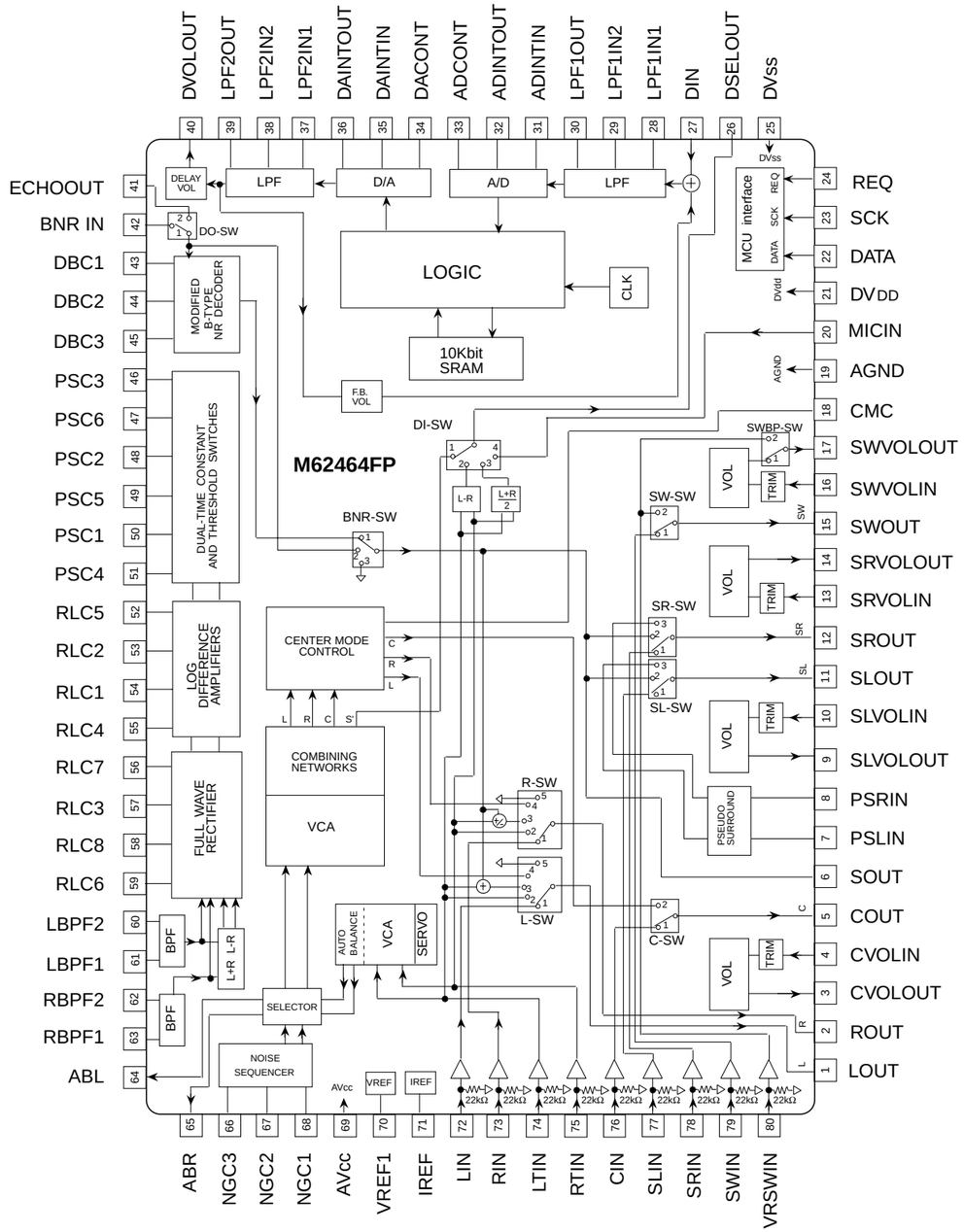
NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

PRO-LOGIC BOARD

TABLE OF CONTENTS

M62464FP Internal Block 13-1
Components & Chips Layout 13-2
Voltages 13-3
M62420FP & BA4558N Internal Block 13-4
Circuit Diagram 13-5
Electrical parts list 13-6

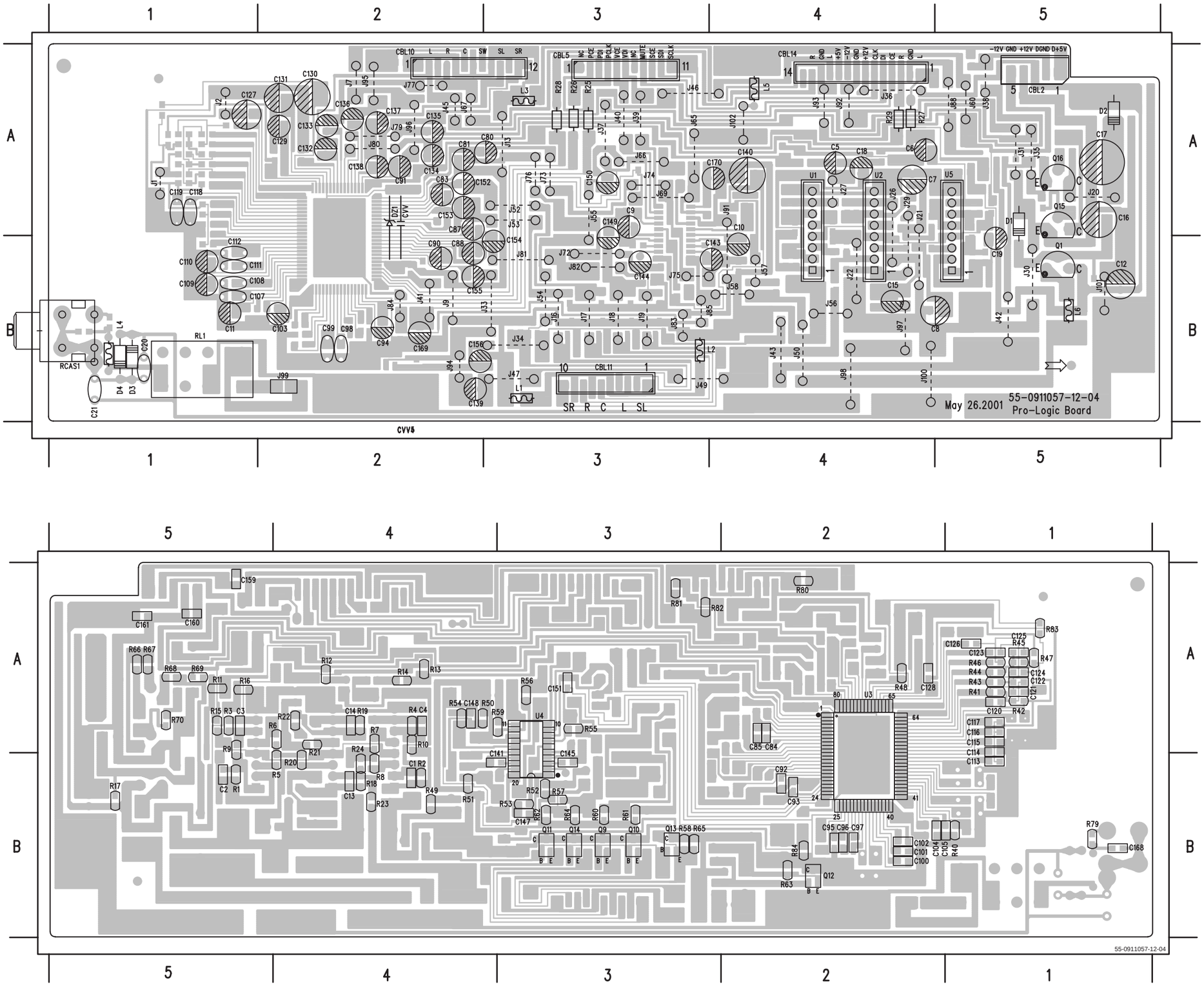
M62464FP INTERNAL BLOCK



13-2

COMPONENTS & CHIPS LAYOUT

C1	B2	CVV	A4	R2	B2
C10	B2	D1	A1	R20	B2
C100	B4	D2	A1	R21	A2
C101	B4	D3	B5	R22	A2
C102	B4	D4	B5	R23	B2
C103	B4	DZ1	A4	R24	B2
C104	B4	J1	A5	R25	A3
C105	B5	J100	B2	R26	A3
C107	B5	J101	B1	R27	A2
C108	B5	J102	A2	R28	A3
C109	B5	J13	A3	R29	A1
C11	B5	J16	B3	R3	A1
C110	B5	J17	B3	R4	A2
C111	B5	J18	B3	R40	B5
C112	B5	J19	B3	R41	A5
C113	B5	J2	A5	R42	A5
C114	A5	J20	A1	R43	A5
C115	A5	J21	B2	R44	A5
C116	A5	J22	B2	R45	A5
C117	A5	J26	A2	R46	A5
C118	A5	J27	A2	R47	A5
C119	A5	J29	B2	R48	A4
C12	B1	J30	B1	R49	B2
C120	A5	J31	A1	R5	B2
C121	A5	J33	B3	R50	A2
C122	A5	J34	B3	R51	B2
C123	A5	J35	A1	R52	B3
C124	A5	J36	A2	R53	B3
C125	A5	J37	A3	R54	A2
C126	A5	J38	A1	R55	A3
C127	A5	J39	A3	R56	A3
C128	A4	J40	A3	R57	B3
C129	A4	J41	B4	R58	B3
C13	B2	J42	B1	R59	A3
C130	A4	J43	B2	R6	A2
C131	A4	J45	A4	R60	B3
C132	A4	J46	A3	R61	B3
C133	A4	J47	B3	R62	B3
C134	A4	J49	B3	R63	B4
C135	A4	J50	B2	R64	B3
C136	A4	J52	A3	R65	B3
C137	A4	J53	A3	R66	A1
C138	A4	J54	B3	R67	A1
C139	B4	J55	A3	R68	A1
C14	A2	J56	B2	R69	A1
C140	A2	J57	B2	R7	A2
C141	B3	J58	B2	R70	A1
C143	B3	J60	A2	R79	B5
C144	B3	J65	A3	R8	B2
C145	B3	J66	A3	R80	A4
C147	B3	J67	A4	R81	A3
C148	A2	J69	A3	R82	A3
C149	A3	J7	A4	R83	A5
C15	B2	J72	B3	R84	B4
C150	A3	J73	A3	R9	B1
C151	A3	J74	A3	RCAS1	B5
C152	A4	J75	B3	RL1	B5
C153	A4	J76	A3	U1	A2
C154	B3	J77	A4	U2	A2
C155	B4	J79	A4	U3	A4
C156	B4	J80	A4	U4	A3
C159	A1	J81	B3	U5	A1
C16	A1	J82	B3		
C160	A1	J83	B3		
C161	A1	J84	B4		
C168	B5	J85	B3		
C169	B4	J88	A1		
C17	A1	J9	B4		
C170	A2	J91	B2		
C18	A2	J92	A2		
C19	B1	J93	A2		
C2	B1	J94	B4		
C20	B5	J95	A4		
C21	B5	J96	A4		
C3	A1	J97	B2		
C4	A2	J98	B2		
C5	A2	J99	B4		
C6	A2	L1	B3		
C7	A2	L2	B3		
C8	B2	L3	A3		
C80	A4	L4	B5		
C81	A4	L5	A2		
C83	A4	L6	B1		
C84	A4	Q1	B1		
C85	A4	Q10	B3		
C87	A4	Q11	B3		
C88	B4	Q12	B4		
C9	A3	Q13	B3		
C90	B4	Q14	B3		
C91	A4	Q15	A1		
C92	B4	Q16	A1		
C93	B4	Q9	B3		
C94	B4	R1	B1		
C95	B4	R10	A2		
C96	B4	R11	A1		
C97	B4	R12	A2		
C98	B4	R13	A2		
C99	B4	R14	A2		
CBL10	A4	R15	A1		
CBL11	B3	R16	A1		
CBL14	A2	R17	B1		
CBL2	A1	R18	B2		
CBL5	A3	R19	A2		



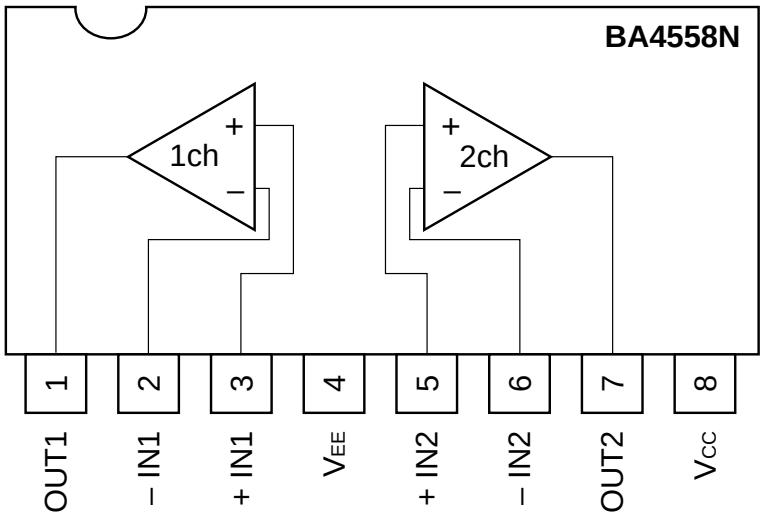
U3 (M62464FP)							
Pin No.	**Voltage**	**Pin No.**	**Voltage**	**Pin No.**	**Voltage**	**Pin No.**	**Voltage**
1	4,33V	21	4,98V	41	4,34V	61	4,36V
2	4,33V	22	4,7V	42	4,34V	62	4,27V
3	3,52V	23	38,5mV	43	4,34V	63	4,36V
4	2,43V	24	38,8mV	44	4,34V	64	4,34V
5	4,34V	25	5,9mV	45	83mV	65	4,34V
6	4,37V	26	4,33V	46	4,34V	66	4,33V
7	4,34V	27	2,44V	47	4,05V	67	4,43V
8	4,34V	28	2,44V	48	4,34V	68	2,81V
9	3,51V	29	2,44V	49	3,9V	69	8,58V
10	2,42V	30	2,44V	50	4,3V	70	4,34V
11	4,37V	31	2,44V	51	2,9 - 4,3V	71	1,36V
12	4,37V	32	2,44V	52	4,34V	72	4,33V
13	2,43V	33	1,09V	53	4,36V	73	4,33V
14	3,51V	34	0,81V	54	4,36V	74	4,33V
15	3,17V	35	2,44V	55	4,36V	75	4,34V
16	2,42V	36	2,44V	56	4,0 - 4,36V	76	4,34V
17	3,52V	37	2,44V	57	4,36V	77	4,33V
18	4,34V	38	2,44V	58	4,36V	78	4,33V
19	6,6mV	39	2,44V	59	4,31V	79	4,34V
20	4,33V	40	2,44V	60	4,27V	80	3,15V

Pin No.	U1 BA4558N	U2 BA4558N	U4 M62420FP	U5 BA4558N
1	3,3mV	11mV	4,3V	2,8mV
2	11mV	11mV	4,25V	11,3mV
3	11,1mV	11mV	4,24V	11,3mV
4	-11,53V	-11,53V	4,3V	-11,53V
5	11mV	11mV	3,95V	11mV
6	11,5mV	11,1mV	3,94V	11mV
7	1,2mV	9mV	4,29V	11,7mV
8	11,22V	11,22V	2,4mV	11,22V
9			4,68V	
10			4,66V	
11			4,98V	
12			30,1mV	
13			4,8mV	
14			3,94V	
15			3,95V	
16			3,94V	
17			4,24V	
18			4,25V	
19			4,24V	
20			8,59V	

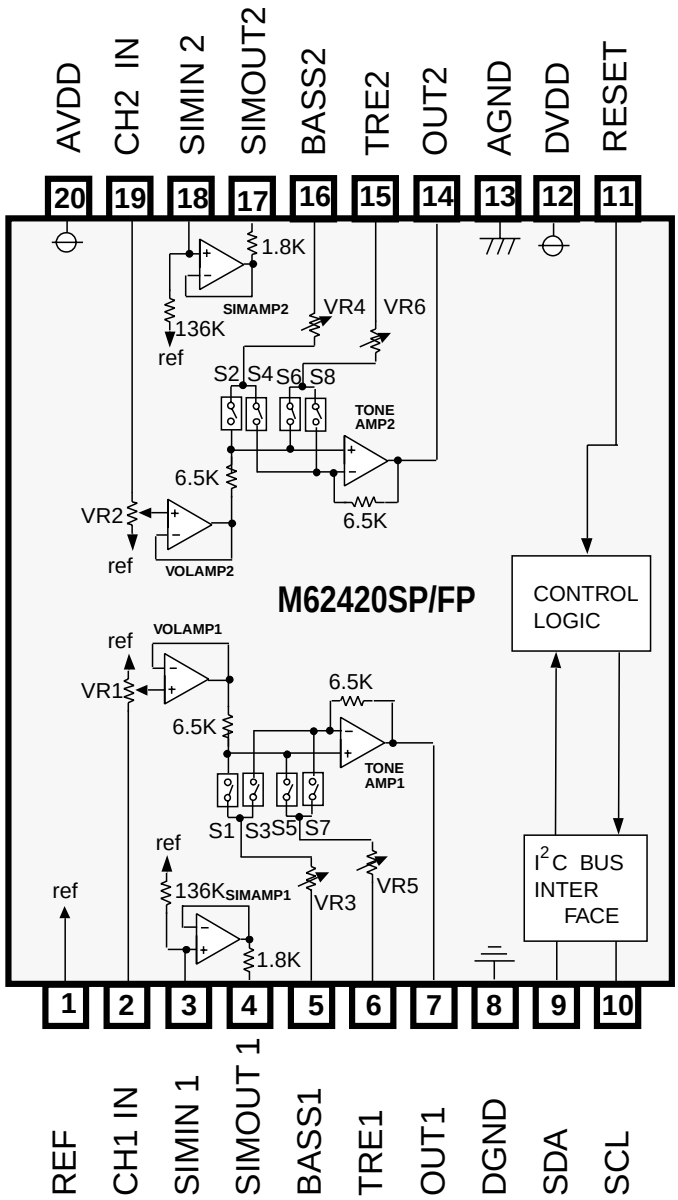
Pin No.	Q1	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
B	9,26V	-2,57V	-2,57V	-2,57V	-2,57V	-2,57V	-2,57V	0,73V	-13,4mV
C	11,93V	5,5mV	5,5mV	5,5mV	5,5mV	5,5mV	5,5mV	9,7mV	11,30V
E	8,59V	5,2mV	5,2mV	5,5mV	6,4mV	6,4mV	5,2mV	3,6mV	-0,66V

Measurement in DVD playing Mode (5,1 Channel Disc)

BA4558N INTERNAL BLOCK

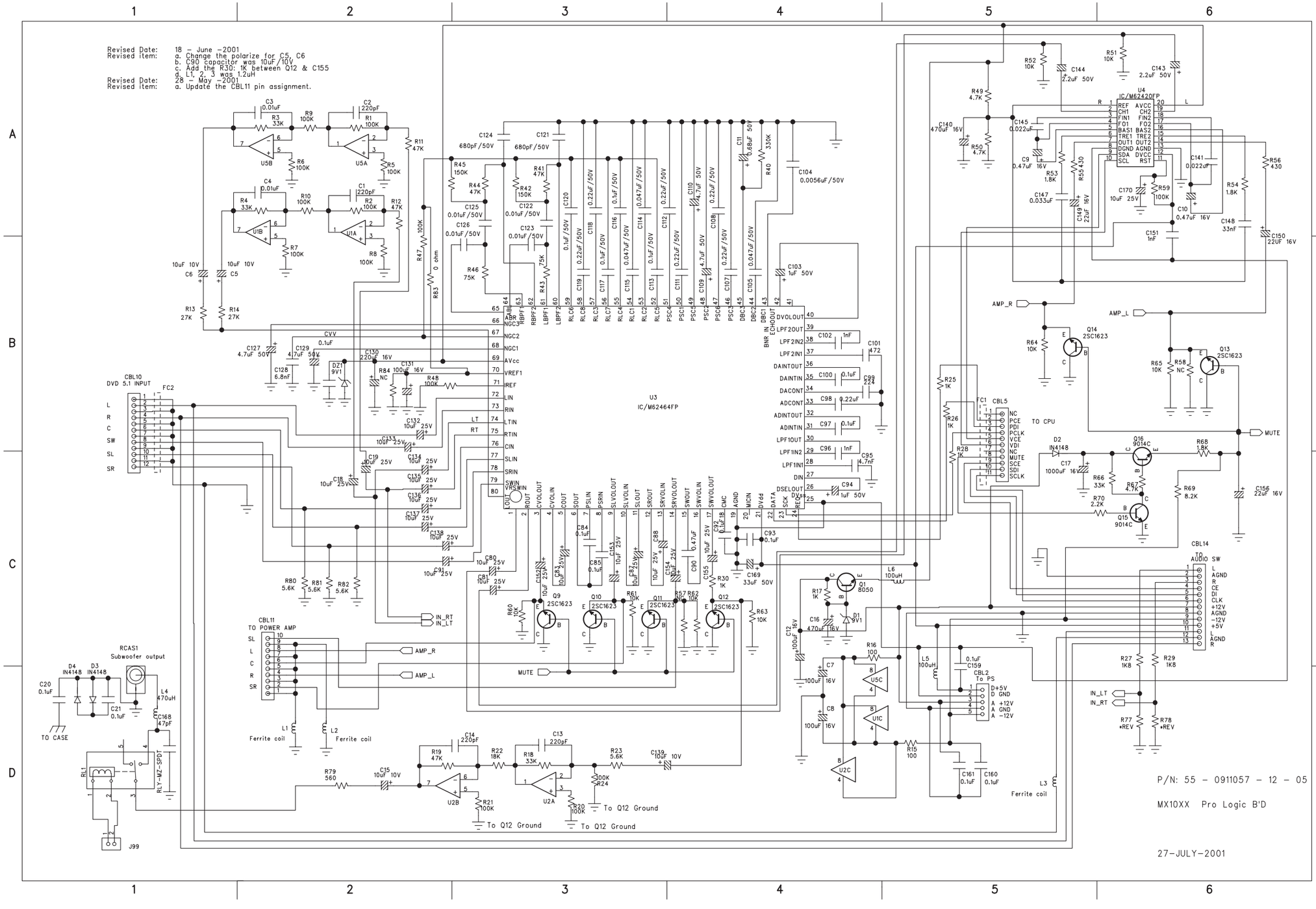


M62420FP INTERNAL BLOCK



13-5

CIRCUIT DIAGRAM



C1	A2	CBL5	B5
C10	A6	CVV	B2
C100	B4	D1	C4
C101	B4	D2	C5
C102	B4	D3	D1
C103	B4	D4	D1
C104	A4	DZ1	B2
C105	B4	J99	D1
C107	B4	L1	D2
C108	A4	L2	D2
C109	B4	L3	D5
C11	A4	L4	D1
C110	A4	L5	D5
C111	B4	L6	C5
C112	A3	Q1	C4
C113	B3	Q10	C3
C114	A3	Q11	C3
C115	B3	Q12	C4
C116	A3	Q13	B6
C117	B3	Q14	B5
C118	A3	Q15	C6
C119	B3	Q16	C6
C12	C4	Q9	C3
C120	A3	R1	A2
C121	A3	R10	A2
C122	A3	R11	A2
C123	B3	R12	A2
C124	A3	R13	B1
C125	A3	R14	B2
C126	B3	R15	D5
C127	B2	R16	C4
C128	B2	R17	C4
C129	B2	R18	D3
C13	D3	R19	D2
C130	B2	R2	A2
C131	B2	R20	D3
C132	B2	R21	D3
C133	B2	R22	D3
C134	C2	R23	D3
C135	C2	R24	D3
C136	C2	R25	B5
C137	C2	R26	B5
C138	C2	R27	C6
C139	D4	R28	C5
C14	D3	R29	C6
C140	A5	R3	A2
C141	A6	R4	A2
C143	A6	R40	A4
C144	A5	R41	A3
C145	A5	R42	A3
C147	A5	R43	B3
C148	A6	R44	A3
C149	A5	R45	A2
C15	D2	R46	B3
C150	A6	R47	B2
C151	A6	R48	B2
C152	C4	R49	A5
C153	C4	R5	A2
C154	C4	R50	A5
C155	C4	R51	A6
C156	C6	R52	A5
C159	D5	R53	A5
C16	C4	R54	A6
C160	D5	R55	A5
C161	D5	R56	A6
C168	D1	R57	B5
C169	C4	R58	B6
C17	C5	R59	A6
C170	A6	R6	A2
C18	C2	R60	C3
C19	C2	R61	C3
C2	A2	R62	C4
C20	D1	R63	C4
C21	D1	R64	B5
C3	A2	R65	B6
C4	A2	R66	C6
C5	B2	R67	C6
C6	B1	R68	C6
C7	D4	R69	C6
C8	D4	R7	B2
C80	C3	R70	C6
C81	C3	R79	D1
C83	C3	R8	B2
C84	C3	R80	C2
C85	C3	R81	C2
C87	C3	R82	C2
C88	C3	R83	B2
C9	A5	R84	B2
C90	C4	R9	A2
C91	C2	RCAS1	D1
C92	C4	RL1	D1
C93	C4	U1	A2
C94	C4	U2	D4
C95	C4	U3	B3
C96	C4	U4	A6
C97	B4	U5	A2
C98	B4		
C99	B4		
CBL10	B1		
CBL11	C2		
CBL14	C6		
CBL2	D5		

ELECTRICAL PARTS LIST - PRO-LOGIC BOARD

MISCELLANEOUS

RCAS1	9965 000 10073	RCA SOCKET 1P BLACK
RL1	9965 000 10072	RELAY MAINATURE 12VDC/2A 2P1T

CAPACITORS

C1	9965 000 10077	CER SMD 220PF 50V 10% X7R 0805
C2	9965 000 10077	CER SMD 220PF 50V 10% X7R 0805
C3	5322 122 34098	10NF 10% X7R 63V
C4	5322 122 34098	10NF 10% X7R 63V
C5	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C6	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C7	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C8	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C9	9965 000 10063	CAP ELEC SM 0,47µF 16V 20%
C10	9965 000 10063	CAP ELEC SM 0,47µF 16V 20%
C11	9965 000 10066	CAP ELEC GR 0,68µF 50V 10%
C12	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C13	9965 000 10077	CER SMD 220PF 50V 10% X7R 0805
C14	9965 000 10077	CER SMD 220PF 50V 10% X7R 0805
C15	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C16	9965 000 10064	CAP ELEC GR 470UF 16V 20%
C17	9965 000 10059	CAP ELEC GR 1000UF 16V 20%
C18	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C19	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C20	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C21	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C80	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C81	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C83	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C84	4822 126 14585	100NF 10% X7R 0805 50V
C85	4822 126 14585	100NF 10% X7R 0805 50V
C87	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C88	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C90	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C91	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C92	4822 126 14585	100NF 10% X7R 0805 50V
C93	4822 126 14585	100NF 10% X7R 0805 50V
C94	9965 000 09668	CAP ELEC GR 1UF 50V 20%
C95	5322 126 10223	4,7NF 10% X7R 63V
C96	5322 122 34123	CER2 0805 X7R 63V 1N 10PM R
C97	4822 126 14585	100NF 10% X7R 0805 50V
C98	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C99	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C100	4822 126 14585	100NF 10% X7R 0805 50V
C101	5322 126 10223	4,7NF 10% X7R 63V
C102	5322 122 34123	CER2 0805 X7R 63V 1N 10PM R
C103	9965 000 09668	CAP ELEC GR 1UF 50V 20%
C104	9965 000 10081	CER SMD 0,0056UF 50V 10% 0805
C105	9965 000 10080	CER SMD 0,047UF 50V 20% 0805
C107	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C108	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C109	9965 000 10065	CAP ELEC GR 4,7UF 50V 20%
C110	9965 000 10065	CAP ELEC GR 4,7UF 50V 20%
C111	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C112	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C113	4822 126 14585	100NF 10% X7R 0805 50V
C114	9965 000 10080	CER SMD 0,047UF 50V 20% 0805
C115	9965 000 10080	CER SMD 0,047UF 50V 20% 0805
C116	4822 126 14585	100NF 10% X7R 0805 50V
C117	4822 126 14585	100NF 10% X7R 0805 50V
C118	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C119	9965 000 10056	CAP CER 0,22UF 25V 10% Y5V
C120	4822 126 14585	100NF 10% X7R 0805 50V
C121	9965 000 10082	CER SMD 680PF 50V 10% X7R 0805
C122	5322 122 34098	10NF 10% X7R 63V
C123	5322 122 34098	10NF 10% X7R 63V
C124	9965 000 10082	CER SMD 680PF 50V 10% X7R 0805
C125	5322 122 34098	10NF 10% X7R 63V
C126	5322 122 34098	10NF 10% X7R 63V
C127	9965 000 10065	CAP ELEC GR 4,7UF 50V 20%
C128	9965 000 10083	CER SMD 6800PF 50V 10% 0805
C129	9965 000 10065	CAP ELEC GR 4,7UF 50V 20%
C130	9965 000 09655	CAP ELEC GR 220UF 16V 20%
C131	9965 000 10058	CAP ELEC GR 100UF 16V 20%
C132	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C133	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C134	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C135	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C136	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C137	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C138	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C139	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C140	9965 000 10064	CAP ELEC GR 470UF 16V 20%
C141	9965 000 10078	CER SMD 22NF 50V 10% X7R 0805
C143	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C144	9965 000 10061	CAP ELEC EX 2,2UF 50V 20%
C145	9965 000 10078	CER SMD 22NF 50V 10% X7R 0805
C147	4822 126 12105	CER2 0805 X7R 50V 33NF PM5
C148	4822 126 12105	CER2 0805 X7R 50V 33NF PM5
C149	9965 000 10060	CAP ELEC GR 22UF 16V 20%
C150	9965 000 10060	CAP ELEC GR 22UF 16V 20%
C151	5322 122 34123	CER2 0805 X7R 63V 1N 10PM R
C152	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C153	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C154	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C155	9965 000 10057	CAP ELEC GR 10UF 25V 20%
C156	9965 000 10060	CAP ELEC GR 22UF 16V 20%
C159	4822 126 14585	100NF 10% X7R 0805 50V
C160	4822 126 14585	100NF 10% X7R 0805 50V
C161	9965 000 09652	CAP CER 0,1UF 50V +80/-20% Y5V
C168	9965 000 10079	CER SMD 47PF 50V 5% NPO 0805
C169	9965 000 10062	CAP ELEC GS 33UF 50V 20%
C170	9965 000 10057	CAP ELEC GR 10UF 25V 20%
CVV	9965 000 09666	CAP CER 0,1UF 100V 20% Y5V

13-6

ELECTRICAL PARTS LIST - PRO-LOGIC BOARD

RESISTORS

R1	4822 117 10837	100K 1% 0,1W
R2	4822 117 10837	100K 1% 0,1W
R3	4822 051 20333	33K 5% 0,1W
R4	4822 051 20333	33K 5% 0,1W
R5	4822 117 10837	100K 1% 0,1W
R6	4822 117 10837	100K 1% 0,1W
R7	4822 117 10837	100K 1% 0,1W
R8	4822 117 10837	100K 1% 0,1W
R9	4822 117 10837	100K 1% 0,1W
R10	4822 117 10837	100K 1% 0,1W
R11	9965 000 09658	RES SMD 47K OHM 5% 1/10W 0805
R12	9965 000 09658	RES SMD 47K OHM 5% 1/10W 0805
R13	4822 051 20273	27K 5% 0,1W
R14	4822 051 20273	27K 5% 0,1W
R15	4822 117 11373	100R 1% RC12H 0805
R16	4822 117 11373	100R 1% RC12H 0805
R17	4822 051 20102	1K 5% 0,1W
R18	4822 051 20333	33K 5% 0,1W
R19	9965 000 09658	RES SMD 47K OHM 5% 1/10W 0805
R20	4822 117 10837	100K 1% 0,1W
R21	4822 117 10837	100K 1% 0,1W
R22	4822 117 10965	18K 1% 0,1W
R23	4822 051 20562	5,6K 5% 0,1W 0805
R24	4822 117 10837	100K 1% 0,1W
R25	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R26	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R27	9965 000 10067	RES CF 1,8K OHM 5% 1/6W AXIAL
R28	9965 000 09673	RES CF 1K OHM 5% 1/6W AXIAL
R29	9965 000 10067	RES CF 1,8K OHM 5% 1/6W AXIAL
R40	4822 051 20334	330K 5% 0,1W
R41	9965 000 09658	RES SMD 47K OHM 5% 1/10W 0805
R42	4822 051 20154	150K 5% 0,1W
R43	9965 000 10076	RES SMD 75K OHM 5% 1/10W 0805
R44	9965 000 09658	RES SMD 47K OHM 5% 1/10W 0805
R45	4822 051 20154	150K 5% 0,1W
R46	9965 000 10076	RES SMD 75K OHM 5% 1/10W 0805
R47	4822 117 10837	100K 1% 0,1W
R48	4822 117 10837	100K 1% 0,1W
R49	4822 051 20472	4,7K 5% 0,1W
R50	4822 051 20472	4,7K 5% 0,1W
R51	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R52	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R53	4822 051 20182	1,8K 5% 0,1W
R54	4822 051 20182	1,8K 5% 0,1W
R55	9965 000 10075	RES SMD 430 OHM 5% 1/10W 0805
R56	9965 000 10075	RES SMD 430 OHM 5% 1/10W 0805
R59	4822 117 10837	100K 1% 0,1W
R60	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R61	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R62	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R63	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R64	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R65	9965 000 10074	RES SMD 10K OHM 5% 1/10W 0805
R66	4822 051 20333	33K 5% 0,1W
R67	4822 051 20472	4,7K 5% 0,1W
R68	4822 051 20182	1,8K 5% 0,1W
R69	4822 051 20822	8,2K 5% 0,1W
R70	4822 117 11449	2,2K 5% 0,1W 0805
R79	4822 051 20561	560R 5% 0,1W
R80	4822 051 20562	5,6K 5% 0,1W 0805
R81	4822 051 20562	5,6K 5% 0,1W 0805
R82	4822 051 20562	5,6K 5% 0,1W 0805
R83	4822 051 20008	JUMPER 0R 0805

COILS & FILTERS

L1	9965 000 10068	IND CHOKE 1,2µH 10% AXIAL
L2	9965 000 10068	IND CHOKE 1,2µH 10% AXIAL
L3	9965 000 10068	IND CHOKE 1,2µH 10% AXIAL
L4	9965 000 10069	IND CHOKE 470UH 10% AXIAL
L5	9965 000 09687	LINE CHOKE 100UH 1A 250VAC
L6	9965 000 09687	LINE CHOKE 100UH 1A 250VAC

DIODES

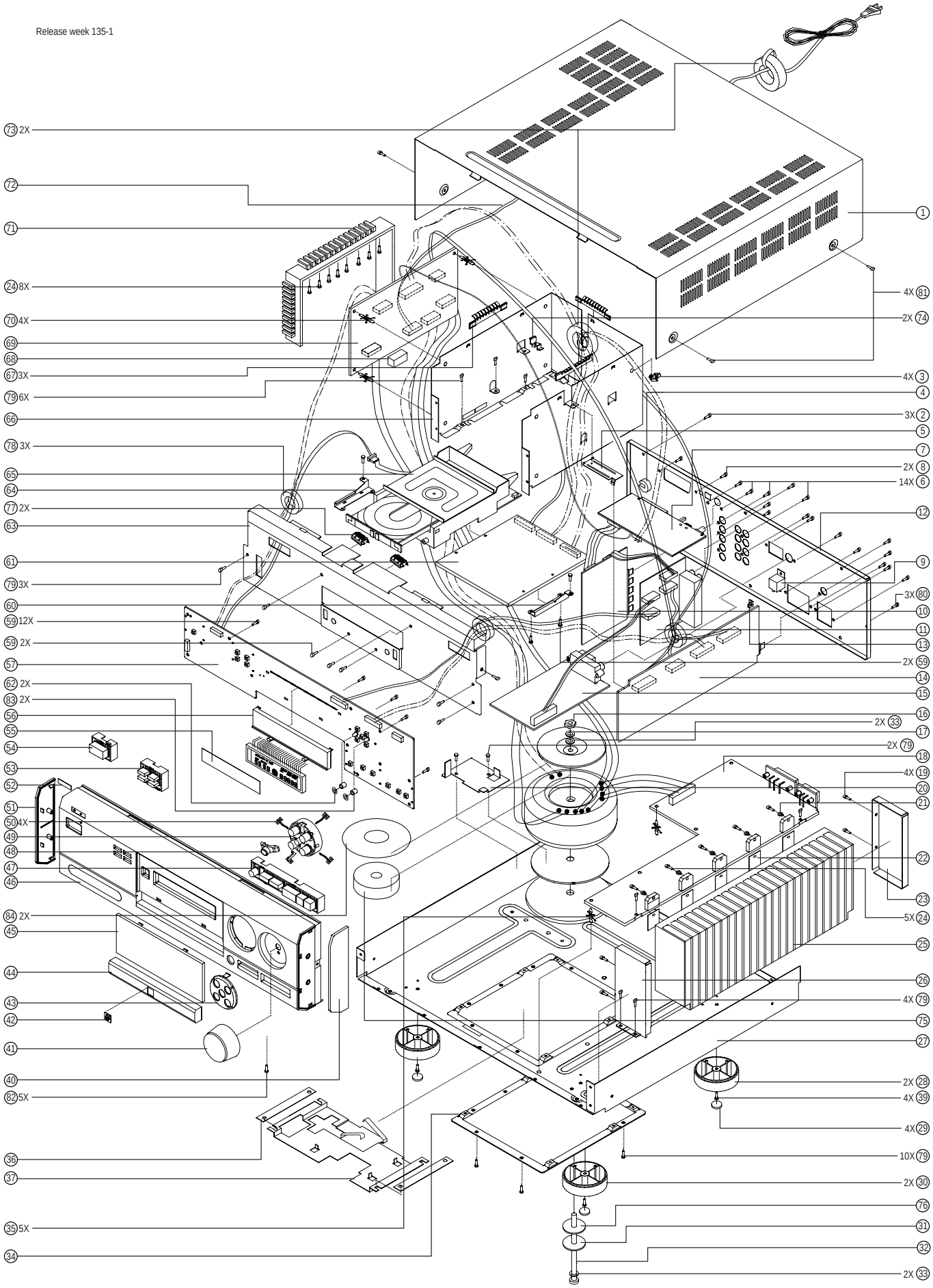
D1	4822 130 30862	BZX79-B9V1
D2	4822 130 30621	1N4148
D3	4822 130 30621	1N4148
D4	4822 130 30621	1N4148
DZ1	4822 130 30862	BZX79-B9V1

TRANSISTORS & INTEGRATED CIRCUITS

Q1	4822 130 62718	JE8050C
Q9	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
Q10	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
Q11	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
Q12	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
Q13	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
Q14	9965 000 09651	TR SMD 2SC1623 HFE200 180MHZ
Q15	9965 000 09881	TR 9014C NPN HFE 100 200MHZ
Q16	9965 000 09881	TR 9014C NPN HFE 100 200MHZ
U1	4822 209 16265	BA4558N
U2	4822 209 16265	BA4558N
U3	9965 000 10071	IC M62464FP SOUND PROCESSORS
U4	9965 000 10070	IC M62420FP SOUND PROCESSORS
U5	4822 209 16265	BA4558N

NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

SET EXPLODED VIEW



MECHANICAL & ACCESSORIES PARTS LIST + SCREW LIST

MECHANICAL PARTS

3	9965 000 10160	LOCKING WIRE SADDLE KWS-1N
4	9965 000 10161	BUSHING, AC CORD
15	9965 000 10639	TUNER BOARD ASSY R.0 /22
28	9965 000 10163	FOOTER REAR ABS BLACK
29	9965 000 10164	RUBBER PAD, FOOT
30	9965 000 10165	FOOTER FRONT ABS SILVER
35	9965 000 10166	SUPPORTER, POWER AMP. PCB
40	9965 000 10167	SIDE CAP RIGHT ABS BLACK
40	9965 000 10410	SIDE CAP RIGHT ABS SILVER
41	9965 000 10168	VOLUME KNOB ABS BLACK
41	9965 000 10411	VOLUME KNOB ABS SILVER
42	9965 000 10169	DVD LOGO BADGE BLACK
42	9965 000 10412	DVD LOGO BADGE SILVER
43	9965 000 10170	SOURCE CAP ABS BLACK
43	9965 000 10413	SOURCE CAP ABS SILVER
44	9965 000 10171	DVD DOOR ABS BLACK
44	9965 000 10414	DVD DOOR ABS SILVER
45	9965 000 10172	FRONT LENS
46	9965 000 10640	FRONT PANEL ABS SPRAY BLACK
46	9965 000 10645	FRONT PANEL ABS SPRAY SILVER
47	9965 000 10174	DVD CONTROL BUTTON BLACK
47	9965 000 10416	DVD CONTROL BUTTON ABS SILVER
48	9965 000 10175	KNOB RING TRANSPARENT
49	9965 000 10176	FUNCTION KNOB LEFT ABS BLACK
49	9965 000 10417	FUNCTION KNOB LEFT SILVER
50	9965 000 10177	KNOB LENS TRANSPARENT
51	9965 000 10178	SIDE CAP LEFT ABS BLACK
51	9965 000 10418	SIDE CAP LEFT SILVER
52	9965 000 10179	LOGO BADGE PHILIPS B/BLACK
52	9965 000 10419	LOGO BADGE PHILIPS B/SILVER
53	9965 000 10180	MODE KNOB ABS BLACK
53	9965 000 10420	MODE KNOB ABS SILVER
54	9965 000 10181	POWER KNOB ABS BLACK
54	9965 000 10421	POWER KNOB ABS SILVER
61	9965 000 10183	DVD MAIN BOARD ASSEMBLY R1.0
65	9965 000 10185	DVD LOADER TVM502T
67	9965 000 10186	SHIELD SPRING PLATE
70	9965 000 10187	SUPPORTER, REGULATOR PCB
72	9965 000 10641	POWER CORD /22
73	9965 000 10189	FERRITE CORE CT 31X16X19MM
77	9965 000 10184	8 FINGER LOADER SPRING PLATE
78	9965 000 10137	FERRITE CORE CT 25X15X10MM

ACCESSORIES

9965 000 10642	SCART CABLE 1.5M
9965 000 10190	CINCH CABLE 3-COLOR 2M
9965 000 10643	OPERATION MANUAL
9965 000 10194	REMOTE CONTROL ASSY
9965 000 10195	AM LOOP ANTENNA
9965 000 10196	FM ANTENNA WIRE
9965 000 10646	SUB-WOOFER BOX SW966/00S 50W
9965 000 10644	SUB-WOOFER BOX SW965/00 50W
9965 000 10192	SATELITE 5-SPEAKER PACKAGE CS985/17
9965 000 08726	FRONT SPK BOX FWB-MX985/17
9965 000 08727	CENTER SPK BOX CS985C/17
9965 000 08728	SURROUND SPK BOX CS985S/17
9965 000 10422	SATELITE 5-SPEAKER PACKAGE CS990/17S
9965 000 08723	FRONT SPK BOX FWB-MX990/17S
9965 000 08724	CENTER SPK BOX CS990C/17S
9965 000 08725	SURROUND SPK BOX CS990S/17S

NOTE: ONLY THE PARTS MENTIONED IN THIS LIST ARE NORMAL SERVICE SPARE PARTS.

Screw List

2	M3 x 6
6	M3 x 8
8	M3 x 5
19	M3 x 5
24	M3 x 8
32	M6 x 65
39	M3 x 5
59	D3 x 10
79	M3 x 5
80	M3 x 5
81	M3 x 6
82	M3 x 8